TEXTILE TECHNOLOGY DIGEST

VOLUME 3 MARCH 1946 NUMBER 3

Foreign Textile Literature

With this issue of *Textile Technology Digest* abstracts of Swedish patents (Swed. P.) and applications (Swed. P. Appl.) appear for the first time. They are taken from *Svensk Papperstidning,* which has just been received from January 1945 to date and will be received currently. Abstracts in this issue are from Vol. 48, Nos. 1-4 (Jan.-Feb. 1945); the remainder of Vol. 48 and the early part of Vol. 49 (1946) will be abstracted in April and May.

Applications will be abstracted only for those nations which make patent applications public prior to the granting of the patent. Sweden happens to be the first of these for which the records are available to us. In prewar patent practice Germany, Holland, Norway and Italy made applications public, and their applications will be abstracted if the practice is resumed. British patent applications are opened to public inspection in England, and will be abstracted when adequate records are available. Dates of all but U. S. and Canadian patents are *application* dates since patents in Europe are effective from the date of application not the date of grant.

Abstracts from current Russian literature will begin to appear in *Textile Technology Digest* for April. Two issues of *Tekstilnaya Promyshlennost* were received too late for abstracting in March, and other Russian sources are expected to be available soon.

TTD:3-46.

Abstracts

ORGANIC FIBERS I

FIBER TERMINOLOGY. Louis A. Olney *Am. Dyestuff Reptr. 34,* 505 (Dec. 3, 1945).

An editorial discusses terminology. "Synthon" is suggested for all "man made" fibers. TTD:3-46.

STAPLE FIBER CUTTER. Am. Viscose Corp. Brit. P. 570 475. *Textile Mfr. 71,* 551 (Dec. 1945).

Staple fibers may be cut from tows or ropes of continuous filaments. TTD:3-46.

TEXTILE FIBERS. An engineering approach to their properties and utilization. Harold De W. Smith. Lecture before ASTM; 66 pp.

Reviewed in *India Rubber World 113,* 433 (Dec. 1945). Reprinted in *Rayon Textile Monthly 26,* 271-5, 389-93, 439-42, 516-8, 589-92 (Jun., July, Aug., Sept., Oct., Nov. 1945). TTD:3-46.

Vegetable fibers I 1

ACID IN COTTON. Organic acid content of raw cotton fiber. Isolation of l-malic acid and citric acid from cotton fiber. Elizabeth R. McCall and Jno. D. Guthrie. *J. Am. Chem. Soc. 67,* 2220-1 (Dec. 1945).

Analysis of four samples reveals that about 0.5% l-malic acid (common) and 0.07% citric acid are present in raw cotton fiber, these 2 organic acids having been isolated in crystalline form. TTD:3-46.

COLORED RAW COTTON. Russia is spinning colored raw cotton. Anon. *Textile Age 9,* No. 12, 82 (Dec. 1945).

Several thousand acres of colored cotton (in natural colors of red, orange, chestnut, green and yellow) have been planted by Molotov Textile Factory, Moscow. TTD:3-46.

COTTON MECHANIZATION. Mechanization of cotton production relative to processing and marketing. Francis L. Gerdes, USDA. *Textile Bull. 69,* No. 8, 34, 36, 39, 60-1 (Dec. 15, 1945).

Along with machine picking and cleaning of cotton should go improvement in the extraction of foreign matter from the ginned lint. Machine picked cotton usually shows 5% more waste than hand-picked. TTD:3-46.

FLAX. Low and variable yield of flax straw in Ireland. Anon. *Fibers, Fabrics & Cordage 12,* 479-81 (Dec. 1945).

Yields in flax are not appreciably greater than a century ago in Ireland. Various factors that have a bearing (weather, soil condition, fertilizer) are considered. TTD:3-46.

FLAX STRUCTURE. Effect of flax straw maturity on microscopic structure and dimensions of ultimate fibers. Winifred M. P. Cook. *J. Council Sci. Ind. Res. (Australia) 18,* 225-30 (Aug. 1945).

A fiber microtome designed for cutting a cross section

of the fiber is described and illustrated. Spinning quality is at its highest when seed bolls are formed and stems are turning yellow. TTD:3-46.

JUTE. Improvements in jute machinery. Anon. *Jute & Canvas Review 17,* No. 205, 10 (Oct.-Nov. 1945).

Wartime improvements in jute machinery are briefly summarized with particular reference to spreading and softening machinery and to patent drawing frames. TTD:3-46.

UNRETTED FLAX and hemp as a textile fiber. Anon. *Chem. & Met. Eng. 52,* No. 12, 186, 188, 190 (Dec. 1945).

With little of the retted flax and hemp fiber available for its long fiber flax spinning system, Germany had to use unretted flax or hemp grown primarily for the seed. Different methods used by the Germans for decorticating (e. g. the Korte process) and for other fiber processing are described. TTD:3-46.

INSULATING FIBERS. P. Evans (to Kapok, Ltd.). Brit. P. 570 182. *Textile Mfr. 71,* 550 (Dec. 1945).

Soundproofing material is made by treating kapok fibers with a synthetic resin, the whole forming a non-felted mass of bonded fibers. TTD:3-46.

BLEACHING OF JUTE. B. P. Ridge & A. H. Little, Booklet of Imperial Chemical Industries, Ltd. 1945; 20 pp.

Reviewed in *Fibers, Fabrics & Cordage 12,* 497 (Dec. 1945). TTD:3-46.

JUTE CELLULOSE AND THE RELATION OF JUTE INCRUSTANTS TO FIBER AND YARN STRENGTH. B. P. Ridge, A. H. Little & J. Wharton. Booklet of Imperial Chemical Industries, Ltd. 1945; 32 pp.

Reviewed in *Fibers, Fabrics & Cordage 12,* 497 (Dec. 1945). TTD:3-46.

RECRUITS TO COTTON. Booklet of Recruitment and Training Dep't. of Cotton Board, Manchester; 1945; 60 pp.

Reviewed in *Fibers 6,* 182 (Dec. 1945). TTD:3-46.

Animal fibers I 2

WOOL FIBERS. Frictional properties of wool fibers. E. H. Mercer, Nat'l Standards Lab. (Australia). *J. Council Sci. Ind. Res. (Australia) 18,* 188-200 (Aug. 1945).

The stick-slip method of Bowden and Leben is used to measure the frictional properties of wool fibers, of value in problems of wool felting. Frictional difference increases in acid and alkaline media, probably accounting for more rapid rate of felting. TTD:3-46.

WOOL INDUSTRY problems and future. L. Bellwood. *Textile Mfr. 71,* 506-8 (Dec. 1945).

Problems confronting the wool industry with respect to a labor supply are presented. A partial breakdown of individual operations in wool processing is given with a discussion of wider adoption of automatic machinery. TTD:3-46.

Artificial fibers I 3

ALGINATE RAYON. Scaffolding threads in yarn and cloth structure. A. Johnson, Courtaulds, Ltd. *J. Textile Inst. 36,* P203-16; *Rayon Textile Monthly 26,* 649-50 (Dec. 1945).

Alginate rayon (Calcium alginate) is carefully investigated for use in binding, supporting, embossing, carrying, ornamenting, bonding and spacing. Its property of solubility in weak alkaline solutions makes it highly effective in these uses. In many cases it substitutes for a size and to better effect. Example of use as binding agent: yarns of long fiber are frequently hairy in character; they may, however, be bound with alginate rayon and easily woven in a tight fabric and the rayon then dissolved in an alkaline solution. TTD:3-46.

FIBER PROPERTIES. Physical and chemical measurements on regenerated cellulose fibers. Nils Gralen & Olaf Samuelson, Swedish Institute of Textile Research and Mo och Domsjö A/B. *Svensk Papperstidning 21,* 1-5 (Jan. 15, 1945) (in English).

From measurements of molecular weight and polydispersity of regenerated cellulose by the ultracentrifuge and diffusion methods, and from x-ray structure, pentosan content, Cu number and alkali solubility it appears that degree of polymerization is a significant factor in quality of rayon fibers, but not by any means the controlling factor. Rayon staple fiber from a spruce sulfite pulp and a pine sulfate pulp were compared. It appears that high degree of polymerization, low polydispersity, high strength, low Cu number and low alkali solubility are desirable for rayon quality. TTD:3-46.

ZEIN FIBERS. Preparation by wet spinning. C. B. Croston, C. D. Evans & A. H. Smith, USDA. *Ind. Eng. Chem. 37,* 1194-8 (Dec. 1945).

A new method of producing textile fibers from zein (a prolamine) by wet spinning is described. An alkaline dispersion (pH 11.3-12.7) is used instead of organic solvents in order to avoid the extra cost of recovering the organic solvents. The coagulating bath, in which salt may or may not be used, usually contains (in wt.-%) H_2SO_4, 4.7; acetic acid, 3.1: $ZnSO_4$, 4.4. Filament breakage occurred at 200-350% elongation. A "precure" (between coagulation and stretching) consists of a mild formaldehyde treatment. Zein fibers are highly resilient and flexible and show a strength of 1.87 (dry) and 0.75 (wet) g. per

denier. Acetylation improves dyeing properties of zein (as of casein) fibers. TTD:3-46.

YARN TENACITY. W. J. C. Amend (to E. I. duPont de Nemours). Brit. P. 569 878. *Textile Mfr. 71,* 549 (Dec. 1945).

High tenacity yarn is developed by wet-stretching cellulose ether filaments from a 5% urea solution. TTD:3-46.

CASEIN THREADS. R. L. Wormell (to Courtaulds, Ltd.). Brit. P. 570 205. *Textile Mfr. 71,* 550 (Dec. 1945).

Extruded casein threads are treated with a hardening agent (formaldehyde and ammonia), stretched and again hardened while under tension. TTD:3-46.

ARTIFICIAL FIBERS. R. Signer. Brit. P. 570 572. *Textile Mfr. 71,* 552 (Dec. 1945).

Artificial protein fibers are strengthened by stretching and hardening operations. TTD:3-46.

MELT SPINNING ACETATE. Leavitt N. Bent (to Hercules Powder Co.). Can. P. 431, 648, Dec. 4, 1945.

Cellulose acetate filaments, without solvents or plasticizers, are extruded at 425-500°F, stretched, and rapidly cooled. Thin filaments are thus produced, since the stretch is carried to at least 90% decrease in the diameter of the filament as it leaves the orifice. TTD:3-46.

ALGINATE FIBERS. Horace J. Hegan & Jno. H. Givens (to Courtaulds, Ltd.). Can. P. 432 415, Jan. 8, 1946.

In producing artificial filaments an aqueous solution of NH_4 alginate and finely divided particles of $CaCO_3$ is extruded into a setting medium of an acid and about 5% $CaCl_2$. TTD:3-46.

ARTIFICIAL BRISTLES. Camille Dreyfus. Can. P. 432 489, Jan. 15, 1946.

In producing artificial filaments a melt of cellulose acetate and a plasticizer is extruded and suddenly cooled to a temperature below 0°C in from 0.05-0.25 sec. Strong filaments, bristles or straws are obtained. TTD:3-46.

ALGINATE YARNS. Jno. B. Speakman (to Cefoil, Ltd. Can. P. 432 527, Jan. 15, 1946.

During alginate yarn spinning filaments are coated with a vegetable oil, emulsified in the coagulating liquid to prevent the filaments from adhering one to another. TTD:3-46.

RAYON PULP. Thuringische Zellowelle A.-G. Swed. P. Appl. 6926/38, Dec. 23, 1938; *Svensk Papperstidning 48,* 61 (Feb. 15, 1945).

Process and apparatus for alkaline preparation of a refined cellulose. TTD:3-46.

PERFORATED FOILS. M. von Ardenne. Swed. P. 112 768, Nov. 28, 1942; *Svensk Papperstidning 48,* 6 (Jan. 15, 1945).

Cellulose derivatives or regenerated cellulose foils are perforated with extremely fine holes for use as ultrafilter membranes or for preparation of electron microscope specimens. The holes are formed by distributing extremely fine particles of a reactive substance over the foil and then raising the temperature to initiate the reaction whereby each particle forms a hole in the foil. TTD:3-46.

Synthetic fibers I 4

MAN-MADE FIBERS in war and peace. Graeme Whytlaw, Am. Viscose Corp. *Can. Textile J. 62,* No. 25, 40-2 (Dec. 14, 1945).

War increased the demands on man-made fibers and peacetime uses of them will expand. Fibro (staple fiber) has a particularly bright future for it fits all 3 of the big spinning systems (cotton, worsted and woolen) by relatively simple changes in length and size. Vinyon N bristles, unlike those of casein, nylon and viscose which are not usable in water paints, can be used like natural bristles. TTD:3-46.

NYLON SPINNING. Edgar W. Spanagel (to E. I. duPont de Nemours & Co.). USP 2 385 890, Oct. 2, 1945.

In the melt spinning and cold-drawing of nylon yarn, addition of a finely divided inert material (e. g. TiO_2 or SiO_2) in minute quantities (preferably 0.01-0.3%) greatly reduced yarn breakage (from 2.0 complete yarn breaks per pound to 0.2). The very small quantity of oxide does not visibly deluster the yarn. TTD:3-46.

CRIMPING VISCOSE FILAMENTS. W. R. Weigham (to Courtaulds, Ltd.). Brit. P. 570 159. *Textile Mfr. 71,* 550 (Dec. 1945).

Viscose rayon filaments containing at least 7% xanthate sulfur are stretched in dilute acid at 60°C until xanthate sulfur is dissolved and are then relaxed in water. TTD:3-46.

NYLON TYPE YARN. Camille Dreyfus. Can. P. 432 737-8-9, Jan. 22, 1946.

Nylon type yarn is made by one of these 3 processes: (1) pentamethylene dithiourea and hexamethylene glycol, in mol ratio about 1:1, are heated. (2) Hexamethylenediamine and diurea, in mol ratio at least 1:1, are heated at 220-250°C (3) Hexamethylenediamine and a monocarboxylic acid in mol ratio 1:1 are heated at 220-280°C. TTD:3-46.

ARTIFICIAL LEATHER. S. Landa & O. Wichterle. Swed. P. 112 914, June 30, 1942; *Svensk Papperstidning 48,* 32 (Jan. 31, 1945).

Artificial leather which is permeable to gases and water vapor is made from nylon filaments. TTD:3-46.

VISCOSE. Phrix-Arbeitsgemeinschaft. Swed. P. 113 579-80, Oct. 21, 1941; *Svensk Papperstidning 48,* 31 (Jan. 31, 1945).

Raw materials with a high pentosan content are converted into a cellulose pulp which is particularly suitable for the manufacture of viscose spinning solutions. TTD:3-46.

Fiber applications **I 5**

FELT. J. E. Woolley (to Vol Crepe, Ltd.). Brit. P. 570 410. *Textile Mfr. 71,* 551 (Dec. 1945).

A felt material is composed of finely divided animal or vegetable fibers, rubber, or a synthetic elastomer, and an expanding agent. TTD:3-46.

HEAT INSULATION. Robt. F. Massa. Can. P. 432 366, Jan. 8, 1946.

A heat insulating material consists of a number of superimposed layers each having at least 1 tissue-thin sheet of unwoven, porous, felted fibers. TTD:3-46.

NONSLIP FIBERS. Otto Albrecht (to Soc. of Chemical Industry in Basle). Can. P. 432 582, Jan. 15, 1946.

To render fibrous materials fast to slipping they are impregnated with a solution having the general formula R'-a-CH_2-R and below 180°C. In the formula R' may be a radical composed of isoprene units, or one derived from rosin; R is an isothiourea salt radical, and a is a phenolic radical. TTD:3-46.

INORGANIC FIBERS II

Glass fiber **II 2**

FIBREGLAS hopes for bigger role in textiles' future. Anon. *Textile Colorist 67,* 166-7 (Dec. 1945).

Fiberglas recommends itself because of its incombustibility and dimensional stability. Its present and future applications are discussed. TTD:3-46.

FIBERGLASS YARN. A. M. Robertson, Fibreglass, Ltd. *Textile Mfr. 71,* 503-5 (Dec. 1945).

A brief review of Fiberglass (its history and manufacture) is given along with a list of its uses (textile and other). TTD:3-46.

GLASS FIBER YARN. Anon. *Fibers 6,* 169-71, 184 (Dec. 1945).

The properties of glass fiber yarn (both the continuous filament and the staple) and processes of manufacture are surveyed, along with a reference to the historical background. TTD:3-46.

GLASS FIBER. Lawrence P. Biefeld (to Owens-Corning Fiberglas Corp.). USP 2 392 805, Jan. 15, 1946.

Fine glass fibers, while being drawn out and wound on a spindle, are treated with a binder and lubricant to prevent abrasion. Instead of incompatible substances such as gelatin and oil, often unsatisfactory because of nonuniformity of binder coating, a saline lubricant and a siloxane resin binder are used, in combination or separately. Example: The lubricant is 0.01 to 1% of dodecyltrichlorosilicane and the binder is 5-15% of phenylethylsiloxane resin, both in Stoddard solvent. TTD:3-46.

GLASS FIBER. Richard M. Roberts (to Owens-Corning Fiberglas Corp.). USP 2 392 882, Jan. 15, 1946.

Light weight, weather-resistant and nonflammable camouflage nets are made by applying glass fibers through an air blast in heterogeneous arrangement, directly to a backing material of wire mesh. TTD.3-46.

Applications **II 3**

ASBESTOS LAMINATES. Manuel P. Kimeney (to Johns-Manville Corp.). USP 2 393 947, Jan. 29, 1946.

A 2-4 ply bonded laminate is produced by impregnating asbestos sheets with thermosetting resin containing 15-20% of tricresyl phosphate and cementing together under a pressure of 700-900 psi at 325-350°F. This product is tough and flameproof and provides an adherent facing for mineral wool insulation. TTD:3-46.

FIBER TO YARN III

Fiber preparation **III 1**

CARDING developments in relation to modern spinning technique. Anon. *Textile Recorder 63,* No. 753, 40-1 (Dec. 1945).

Further improvements in cotton spinning to effect reductions in operating costs may well start with carding. Instead of stopping the card every 2 to 3 hours for stripping cylinder and doffer (an operation more injurious to the operator's health than any other), continuous stripping would reduce this operation to once in 3 or 4 days. Another method makes use of a nonflexible saw-tooth wire on card cylinders whereby stripping would be necessary about once in 1 or 2 days. TTD:3-46.

COMBING. Leather conservation in combing. Anon. *Wool Record & Textile World 68,* 1158, 1160-1 (Dec. 27, 1945).

Accurate settings are essential in drawing of slivers. Maintenance of equalized pressure on each side of the roller is particularly important. Proper traverse should be maintained. Attention to these and other factors will help in holding down the cost of drawing, always relatively high. TTD:3-46.

STATIC ELECTRICITY REMOVED. Anon. *Chem. Eng. News 23,* 2246 (Dec. 10, 1945).

Static electricity, most troublesome during the drawing process, is removed by the Ionotron, developed

by U. S. Radium Corp., which ionizes the air up to a distance of 3 in. from the surface. TTD:3-46.

STRIPPING MACHINE. Anon. *Fiber & Fabric 98,* No. 3176, 10 (Dec. 15, 1945).

A new jackspool stripping machine (6 x 3 x 3.5 ft.), adjustable to spools of 36-72 in., is easily installed and operated. TTD:3-46.

WORSTED DRAWING. Short cut methods in worsted drawing. Anon. *Textile Recorder 63,* No. 753, 42, 56 (Dec. 1945).

Practical suggestions are given for eliminating one or more drawing operations without harm to the product, thus reducing operating costs. Accompanying are 2 tables showing details for reducing a 288 dram top to a 3.5 dram roving (Table 1 in 9 operations, Table 2 in 7 operations). TTD:3-46.

CARDING. I. Marsden & T. Chantler (to Platt Bros. & Co. Ltd.). Brit. P. 570 129. *Textile Mfr. 71,* 549 (Dec. 1945).

Bobbins of carding engine condensers have large flanges for holding a larger than usual quantity of roving. TTD:3-46.

Spinning III 2

BLENDING. How to make a blend. Anon. *Saco-Lowell Bull. 17,* No. 4, 18-23 (Dec. 1945).

Suggestions to manufacturers regarding blending are given. Factors to be considered are noted and 9 typical blends of synthetic fibers listed. TTD:3-46.

FLAX SPINNING. Recent developments in flax production and spinning. S. A. G. Caldwell. *Textile Mfr. 71,* 529-30 (Dec. 1945).

War requirements accelerated the development of unretted flax processing. Dry spinning direct from the sliver eliminates roving and may have possibilities in spinning of long-staple rayon on flax machinery. TTD:3-46.

LONG STAPLE SPINNING. Processing long-staple fibers. Anon. *Saco-Lowell Bull. 17,* No. 4, 1-8 (Dec. 1945).

This, the last of 6 parts, discusses problems of adapting cotton spinning to spinning of long-staple fibers (from 1½-3 in.); the model "Z" frame is described for efficient spinning of long staple. TTD:3-46.

RAYON AND SILK. Recent developments in winding, doubling and twisting of rayon and silk yarns. Anon. *Textile Recorder 63,* No. 753, 46-8 (Dec. 1945).

Recent developments in doubling, twisting, and winding machines of Sidney and E. Scragg, Ltd. are reviewed. TTD:3-46.

SPINNING. Assessing spinning efficiency. Anon. *Wool Record & Textile World 68,* 1107, 1109 (Dec. 20, 1945).

A formula for obtaining the efficiency of a spinning frame, or the factor of efficiency, is given along with an actual calculation. TTD:3-46.

SPINNING BLENDS on the cotton system. Eugene C. Gwaltney, Saco-Lowell Shops. *Can. Textile J. 62,* No. 25, 48, 50 (Dec. 14, 1945); *Cotton* (Atlanta) *109,* No. 12, 111-4 (Dec. 1945); *Rayon Textile Monthly 26,* 644-6 (Dec. 1945).

Static electricity in synthetics, once troublesome, has been largely eliminated in finishing. In roving, twist is considerably decreased as staple length increases. Because of greater uniformity in the synthetic staple it is more easily spun. Static in wool handling is also troublesome but will probably be overcome by chemical treatment. Drawing frames for wool tops remain a problem. Low cost and good quality are strong factors in adapting the cotton system for wool and rayon staple blends. TTD:3-46.

SPINNING MACHINERY. New version of Macclesfield doubler-twister is all metal. Anon. *Silk & Rayon 19,* 1362 (Dec. 1945).

A new doubler-twister entirely of metal, without any wood at all, is more efficient and stronger than heretofore and has less vibration. TTD:3-46.

TENSION PULLEYS. An interesting performance report. Anon. *Saco-Lowell Bull. 17,* No. 4, 13-5 (Dec. 1945).

A new anti-friction tape tension pulley is described for twisters. TTD:3-46.

WOOL AND RAYON: review of their relationship. A. J. Hall. *Silk & Rayon 19,* 1354-5, 1357 (Dec. 1945).

Wool, cotton and silk are considered with respect to their relationship to rayon for blends. Wool is more than likely to maintain its position because of certain inimitable properties (softness, warmth, and felting). Wool and rayon, rather than competitive fibers should be complementary for years to come. TTD:3-46.

TRENDS IN PROCESSING TECHNIQUE. Recruitment and Training Dept. of Cotton Board, Manchester, 1945; price 3s. 6d.

Reviewed in *Fibers 6,* 181 (Dec. 1945). TTD:3-46.

Cotton III 2 a

COTTON SPINNING. High drafts in cotton spinning. R. Howard, Casablancas High Draft Co., Ltd. *Textile Mfr. 71,* 515-7 (Dec. 1945).

High drafting in cotton spinning is discussed from the point of view of costs and economies of operation achieved. Needs of individual mills must be determined by actual mill tests. TTD:3-46.

FLAX SPINNING. J. P. Mackie (to J. Mackie & Sons, Ltd.). Brit. P. 570 315. *Textile Mfr. 71,* 550-1 (Dec. 1945).

A wet spinning frame for flax allows automatic doffing. TTD:3-46.

Rayon — III 2 d

GERMAN RAYON MANUFACTURE. Report on German methods of rayon filaments and staple fiber manufacture. Lloyd L. Leach. *Rayon Textile Monthly 26,* 571-5, 631-6 (Nov., Dec. 1945); *Textile Mfr. 71,* 534-9 (Dec. 1945).

Of plants visited 8 made rayon only, 4 made rayon and staple fiber, 7 made staple fiber only, 5 made rayon raw materials and 2 were equipment manufacturers. Only 1 cellulose acetate staple system was seen; its capacity is 360-420 m/min. German staple fiber production from 1935-39 increased from 20,000-225,000 tons/yr. The plant at Wolfen is mentioned at some length. Of the equipment seen Barmag's 2 for 1 twister, Behnsen and Eirich shredders, Haubold-Hub after-treatment machines, Kuhnle-Kopp-Kausch evaporators, Muller slurry screw-press and Muller and Kosik band-press machine are recommended for further examination. TTD:3-46.

RAYON SPINNING. Am. Viscose Corp. Brit. P. 570 284. *Textile Mfr. 71,* 550 (Dec. 1945).

A centrifugal spinning bucket with reciprocating package support has a device for ejecting the wound cakes. TTD:3-46.

RAYON PROCESSING. Arthur L. Jackson (to Cornelius C. Vanderhooven). Can. P. 431, 715, Dec. 4, 1945.

In rayon manufacture the thread is extruded and collected by the pot spinning process. It is next unwound at a rate of 300 m/min., finished, dried and rewound on a cone, all at the stated speed. TTD:3-46.

RAYON WINDING. Jas. J. Polak & Arthur L. Jackson (to Cornelius C. Vanderhooven). Can. P. 431 716, Dec. 4, 1945.

Freshly spun viscose rayon is wound in a cylinder mounted on a rotating plate. The cylinder revolves slowly; the plate revolves much faster, each on its own axis. Thread falling into the cylinder is thus wound in layers, each layer being a circular series of overlapping rings. TTD:3-46.

YARN STAPILIZER. Jules E. Halin (to Camille Dreyfus). Can. P. 432 480, Jan. 8, 1946.

An abrasive disc mounted on a freely rotating shaft serves to abrade and sever some of the yarn filaments in passing during production of a continuous staple fiber product from a continuous filament rayon yarn. TTD:3-46.

RAPID COURSE ON RAYON. Cotton and Rayon Merchants' Assoc., Manchester, 1945; price 12s. 6d.

Reviewed in *Fibers 6,* 181 (Dec. 1945). TTD:3-46.

Winding — III 3

PIRN WINDERS. New fully automatic pirn winding machines. Anon. *Textile Recorder 63,* No. 753, 43-5, 50 (Dec. 1945).

New pirn winders (one for cotton, woolen and linen yarns; the other for rayon and silk yarns) are described and illustrated. TTD:3-46.

WINDER. Harry W. Butterworth, Jr. & Winfield B. Heinz. USP 2 392 226, Jan. 1, 1946.

In winding or unwinding material on rolls, as in a dyeing operation, an improved tension control, working on the differential drive, maintains a uniform tension on the material and regulates the speed of the operation. TTD:3-46.

WINDING. F. Ridgway (to Arundel Coulthard & Co., Ltd.). Brit. P. 569 765. *Textile Mfr. 71,* 548 (Dec. 1945).

On winders a package, regardless of its size, is always lifted the same distance from the driving drum. TTD:3-46.

WINDING. British Celanese, Ltd. Brit. P. 569 791. *Textile Mfr. 71,* 548 (Dec. 1945).

A yarn package mounting has 2 cooperating cones, one on a fixed axis, with a pivoted arm carrying the other and a tubular yarn support between them. TTD:3-46.

WINDING. Synchro Machine Co. Brit. P. 570 408. *Textile Mfr. 71,* 551 (Dec. 1945).

A winder (for ribbons, threads, wire, etc.) has a power-driven capstan shaft and an independently driven winder shaft. TTD:3-46.

WINDING. F. Ridgway (to Arundel Coulthard & Co., Ltd.). Brit. P. 570 534. *Textile Mfr. 71,* 552 (Dec. 1945).

On a winder a yarn guide with reciprocating cam prevents building up the ends of the package. TTD:3-46.

THREAD WINDING. Walter Siegenthaler (to Maschinenfabrik Schrärer). Can. P. 431 658, Dec. 4, 1945.

In a thread winder a gear-driven spindle mounted in a fixed position acts in cooperation with an adjustable guide drum to package thread. The guide drum is adjusted to increasing package diameter by a weight pressing the drum against the package. TTD:3-46.

BOBBIN WINDING. Paul W. Senfleben (to United Shoe Machinery Co. of Can., Ltd.). Can. P. 431 705, Dec. 4, 1945.

On a bobbin winder with a rotating spindle heaving a number of bobbins a thread controller automatically controls winding and adjusts for bobbins of different sizes. TTD:3-46.

RAYON THREAD CONTROL. Jan J. Schilthus & Arthur L. Jackson (to Cornelius C. Vanderhooven). Can. P. 431 717, Dec. 4, 1945.

A positively driven bobbin regulates the winding speed in packaging rayon thread, there being a gradual deceleration as the bobbin is filled. Control is based on the bobbin speed, not on package size. This is done

by varying the rate of deceleration according to a curve which follows the desired relation between speed and package size. TTD:3-46.

YARN WINDER. Albert W. Height (to Camille Dreyfus). Can. P. 432 599, Jan. 15, 1946.

In a yarn winder, headless packages of yarn with tapered ends are wound on a spindle with a reciprocating traverse ring rail, which operates to superimpose a builder motion upon a chaser motion. TTD:3-46.

RAYON WINDER. Donald I. Gross (to Cornelius C. Vanderhooven). Can. P. 432 911, Jan. 29, 1946.

Freshly spun rayon yarn is wound under slight tension and at a gradually increased speed as it is passed through further treatments. The winder adjusts for changing thickness of the conditioned yarn as it builds up on the package. TTD:3-46.

Yarn processing — III 4

FIBER BONDING. New fiber bonding machinery. Anon. *Cord Age Mag. 44,* No. 6, 24 (Dec. 1945).

Increases in tensile strength of 50-150% are claimed for fibers of the synthetic resins by a bonding process performed on a tensioning and curing machine developed by Dan River Cotton Mills. TTD:3-46.

MOTOR DRIVES. Electric driving of textile factories. V. Applications of individual motor drives. E. Howlett. *Textile Mfr. 71,* 432-3, 436, 478-81 520-2, 523 (Oct., Nov., Dec. 1945).

Some factors to be considered in converting from mechanical to electric drive are discussed in the light of power requirements and machine characteristics. Mule spinning is a special problem because the load fluctuates widely at regular intervals. Various types of electric motors for use in the spinning process are described, the constant-speed motor with eddy current variable-speed coupling seeming best. TTD:3-46.

Yarn products — III 5

PERMANENT WICK. Anon. *Chem. & Met. Eng. 52,* No. 12, 142 (Dec. 1945).

A cigarette lighter wick of asbestos yarn is braided instead of twisted around a core of glass yarn so that it does not ravel. TTD:3-46.

NYLON SPRINGS. Howard J. Doell (to E. I du-Pont de Nemours & Co.). USP 2 392 842, Jan. 15, 1946.

A nylon filament may be twist-coiled under tension without need for a mandrel, by twisting one end with the other held stationary. The spring thus formed is steam-set before release of tension. It has many uses, such as elastic tapes and tops of men's socks. TTD:3-46.

YARN TO FABRIC — IV

SLASHING AND WEAVING discussed by Georgia mill men. Anon. *Cotton* (Atlanta) *109,* No. 12, 103-4, 158, 160, 162 (Dec. 1945).

Problems of slashing and weaving are discussed in a round-table at Georgia Institute of Technology. Resin-type sizes, infrared drying and loom checking and oiling are specific topics considered. TTD:3-46.

WARP SLASHING. Trouble spots in warp slashing. H. B. Sweat, Animal Glue Information Service. *Rayon Textile Monthly 26,* 601-2 (Nov. 1945).

Such problems in rayon slashing as soft warps, scum in the size pan, size spots, foaming, etc., are briefly discussed and solutions suggested. TTD:3-46.

Weaving — IV 3

SINGEING unit. Anon. *Textile Age 9,* No. 12, 106 (Dec. 1945).

A new singer is announced by Carbomatic Corp. TTD:3-46.

SLASHING. Discussions at Eastern Carolina meeting. Anon. *Am. Wool & Cotton Reptr. 51,* No. 48, 67, 69, 71, 73; 59, 47, 49, 50 (Nov. 29 & Dec. 20, 1945).

Transcript of discussion on slashing and weaving at the Eastern Carolina division meeting of the Southern Textile Association, Durham, Nov. 10. Topics include automatic moisture controls on slashers; light and heavy sizes; controls as an aid to production; the multi-motor steam drive; antistretch rolls; and separate motors for loom beams. Use of multidrive mechanisms on slashers is discussed. Anchoring of looms to the floor by glue instead of by screws is reported as a help in reducing vibration. TTD:3-46.

WEAVING of tender and oversized woolen warps. Anon. *Textile Recorder 63,* No. 753, 54, 56 (Dec. 1945).

Means of avoiding or overcoming tender woolen warps are given; particular attention is directed to oversizing and undersizing of wool. TTD:3-46.

WEAVING. Pick-and-pick developments. Portex. *Wool Record & Textile World 68,* 1004-5 (Dec. 6, 1945).

Many varied and novel effects are to be obtained by the pick-and-pick scheme of weaving. Examples of different designs are given. TTD:3-46.

WEAVING. Some causes of warp breakages. D. C. Snowden. *Wool Record & Textile World 68,* 1148, 1150-2 (Dec. 27, 1945).

Practical suggestions for avoiding or reducing warp breakages are made: reduce warp tension and loom speed, modify timing of shed change, keep size of shed as small as possible, and adjust height of backrest to medium position. TTD:3-46.

CRINKLED FABRICS. Cyril M. Croft, Walter H. Hindle & Robt. W. Pinault (to Celanese Corp. of Am.). USP 2 391 950, Jan. 1, 1946.

In fabrics formed of a thermoplastic yarn such as cellulose acetate, and a nonthermoplastic yarn such as cotton, a crinkling effect (as in crepes or seersuckers) may be produced by stretching the fabrics, when drying, 1-10% either weft-wise, warp-wise, or both. Crinkling results from the differential of regain in the 2 types of yarns. This process materially reduces the relatively high cost of producing crepe fabrics by other methods requiring giving a very high (50-100 turns/in.) twist to the yarns. TTD:3-46.

WEAVING. C. H. Baddeley. Brit. P. 570 301. *Textile Mfr. 71,* 550 (Dec. 1945).

A tensioning device consisting of a framework with freely revolving rollers facilitates insertion of selvedge threads during weaving. TTD:3-46.

Looms — IV 3 a

LOOM. W. T. Picking. Brit. P. 570 377. *Textile Mfr. 71,* 551 (Dec. 1945).

A loom weaves pile fabrics. TTD:3-46.

WEFT CARRIERS. C. H. Baddeley. Brit. P. 570 457. *Textile Mfr. 71,* 551 (Dec. 1945).

A weft carrier for a shuttleless loom has a flanged shank with an orifice through which the weft passes. Breakages of warp and weft are reduced. TTD:3-46.

Loom parts — IV 3 b

LOOM CRANKSHAFT REPAIR. J. Stubbs. *Textile Mfr. 71,* 533 (Dec. 1945).

A method of quick crankshaft repair is suggested. TTD:3-46.

SHUTTLE FURRING and yarn tensioning. H. E. Wenrich. *Rayon Textile Monthly 26,* 582-3, 584 (Nov. 1945).

Because of the different tensions required by various yarns, the fixer must be able to secure additional shuttle tension as needed. Besides bristles and pads, strip fur is especially effective, opossum being much superior for rayon weaving. TTD:3-46.

SHUTTLE SELECTION. Careful selection and setting of shuttles is important. J. W. Hutchinson. *Silk & Rayon 19,* 1358-9 (Dec. 1945).

Practical suggestions for compensating slight variations in shuttles (width, weight, grain, and bevel) are offered. TTD:3-46.

SHUTTLES. Keeping shuttle-boxes in condition. H. E. Wenrich. *Rayon Textile Monthly 26,* 646-9 (Dec. 1945).

Anticipating broken picks and "jerk-ins" will help the loomfixer in keeping shuttle-boxes in repair. Practical suggestions for avoiding these troubles are offered. TTD:3-46.

LOOM SHUTTLES. Antonio Villani (to Draper Corp.). USP 2 393 077, Jan. 15, 1946.

In an automatically threading loom shuttle a threading block with recessed trap member prevents the filling thread's being thrown out of the side delivery eye, which would unthread the shuttle. TTD:3-46.

EXPANDER ROLL. Jno. D. Robertson. USP 2 393 191, Jan. 15, 1946.

An improved expander roll for removing wrinkles and stretching fabric weftwise spreads sheet materials, including sheer fabrics, without warp-wise strain. End clamps, instead of coacting clutch teeth, reduce strain and give greater adjustability. TTD:3-46.

WARP BEAMS. Stanley N. McCaslin (to Crompton & Knowles Loom Works). USP 2 393 649, Jan. 29, 1946.

An improved beam head with radially movable clamps is controlled by a rotable disc so that in weaving fabrics of varying widths this disc may be easily adjusted to accommodate for the end pressure of the warp. TTD:3-46.

SPINDLE MOUNT. Georg Wiget (to Société Anonyme Adolphe Saurer). USP 2 393 876, Jan. 29, 1946.

A spindle-release mechanism, pivoted to the shuttle, provides for easy withdrawal of the spindle after the thread has been consumed. TTD:3-46.

TEXTILE SPOOL. Rawson Atwood. Can. P. 432 604-5, Jan. 22, 1946.

A flangeless textile spool consists of a paperboard barrel, inside which are 2 split expansible metal tubes, one inside the other, engaging a spindle. TTD:3-46.

Control devices — IV 3 c

PICK FINDER. Hattersley pick finder motion. Tuner. *Textile Mfr. 71,* 512-4 (Dec. 1945).

Description of the pick motion (over- and under-) is accompanied by detailed drawings of various parts of the pick finder. TTD:3-46.

LOOM CONTROL. Jas. Geier. USP 2 392 913, Jan. 15, 1946.

Improved electrical sensing fingers, for detecting empty cops and causing weaving to cease during replacement, are easily serviced when worn. Similarly, the cooperating springs are easily replaced when broken. Considerable savings are thus effected in time loss due to repairs and consequent shutting down of the loom, as compared with prior devices. TTD:3-46.

LOOM CHECK STRAP. Jno. C. Crocker. USP 2 393 148, Jan. 15, 1946.

A strap that checks the picker stick of a loom is constructed of pieces of short leather with overlapped ends for additional strength. The expensive single long piece of leather hitherto used may thus be eliminated at great saving. TTD:3-46.

CLOTH SHEARING. Wilfred N. Hadley (to Parks & Woolson Machine Co.). USP 2 393 159, Jan. 15, 1946.

An electrical time delay device automatically detects the approach of a seam to the blades in a multiple shear machine, suspending the shearing and then causing it to resume. Damage to the cloth and injury to the blade are prevented. TTD:3-46.

STOP MOTION. H. Rehak. Brit. P. 569 757. *Textile Mfr. 71,* 548 (Dec. 1945).

A stop motion for a knitting machine has a sinker bar with a series of spring fingers for detecting faults. TTD:3-46.

Fabric construction — IV 3 d

CARPET MANUFACTURE. Preparatory process in carpet manufacture. F. R. Tipler. *Textile Mfr. 71,* 510-1, 514 (Dec. 1945).

Loom stoppages and hold-ups in finishing may be largely avoided in carpet weaving by proper preparation of yarn and dyes. Attention also should be paid to winding and warping. TTD:3-46.

NONWOVEN CLOTH. Anon. *Textile Age 9,* No. 12, 18 (Dec. 1945).

Raw cotton combed out in a sheet and compressed between rollers is overprinted with liquid plastic as a fiber binding to make a nonwoven cloth. TTD:3-46.

RAYON SHARKSKIN. Fabric viscose material. Anon. *Am. Wool & Cotton Reptr. 59,* No. 49, 11-2, 47 (Dec. 6, 1945).

Sharkskin fabrics are best made of heavy denier (200 warp and 300 filling) viscose yarns with relatively low twist, that reduce slippage and improves firmness and flexibility. Cost of production is relatively low based on weight of material (3.5-5 yds/lb.). TTD:3-46.

TIRE CORD. Outlook for tire cord. Anon. *Textile Age 9,* No. 12, 64, 66, 68, 70, 72 (Dec. 1945).

Relative position of rayon and cotton in tire cords is discussed. Rayon is apparently entrenched in the truck tire field. TTD:3-46.

TWIST YARN FABRICS. Portex. *Wool Record & Textile World 68,* 1154-5 (Dec. 27, 1945).

Twist yarn fabrics, particularly as regards milling and doubling, are discussed as suitings. TTD:3-46.

WEAVE DESIGN and utility clothes. Portex. *Wool Record & Textile World 68,* 1056-7 (Dec. 13, 1945).

Weave and color designs to be achieved in fabrics for suitings are briefly discussed, 2 detailed examples being given. TTD:3-46.

DRAW STRINGS. Selectus, Ltd. Brit. P. 570 147. *Textile Mfr. 71,* 550 (Dec. 1945).

In tubular weaving of bags draw-strings are provided through introduction of a weft by a second shuttle.

The weft is left floating to the next repeat and skips at least 2 consecutive warps. TTD:3-46.

Weave defects — IV 3 e

FRAYING AND SLIPPAGE in woven textiles. Anon. *Fiber & Fabric 98,* No. 3178, 6-8 (Dec. 29, 1945).

Fraying and slippage, usually found in loosely woven materials like georgettes and chiffons, are generally due to cloth construction and sometimes to sizing. Methods of overcoming these problems as they occur in the cloth processing (sizing, weaving, scouring, bleaching, creping, dyeing, printing and finishing) are suggested. TTD:3-46.

WEFT STRAIGHTENING. L. C. Nield (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 570 399. *Textile Mfr. 71,* 551 (Dec. 1945).

An automatic device detects and straightens weft threads not at right angles to the warp. TTD:3-46.

Knitting — IV 4

KNITTING MACHINES. Quality control on full-fashioned machines. Arthur J. Cobert. *Cotton* (Atlanta) *109,* No. 12, 167-8, 170 (Dec. 1945).

Wider sinker heads are an important improvement in hosiery knitting machines. Length control of hosiery is now maintained by a tension meter. Two much desired improvements have to do with adjustment of stitch tension by an independent regulator adjustment and by an additional adjustment for the needle bar to compensate for tight and loose knitting. TTD:3-46.

KOMET MACHINE. Changing styles on Komets. K. O. Metz. *Cotton* (Atlanta) *109,* No. 12, 173-5 (Dec. 1945).

Detailed instructions to fixers are given for speeding up time of change-over from one pattern to another (e. g. on a 200-N machine from a 3 x 3 to a 6 x 6 set-up). Reduction in the number of sliders changed, involving a thorough prior knowledge of the blueprint but not too constant a reference to it, is an important factor. TTD:3-46.

NEW LATCH NEEDLE knitting machine. Anon. *Can. Textile J. 62,* No. 25, 42-3 (Dec. 14, 1945).

A latch needle machine which will duplicate fabrics originally made on loop wheel machines is announced by Mellor Bromley and Co., Leicester, Eng. With fewer loop-building elements required than in the bearded needle machine more feeders are possible. Movement of tension rollers is positive and does not depend on friction. TTD:3-46.

NO SEAM NYLON stocking of the future is shown. Anon. *Southern Knitter 9,* No. 12, 43; *Textile Age 9,* No. 12, 104-5 (Dec. 1945).

A seamless nylon stocking is described. Right-angled

position of the wales of the toe gusset and of those in the stocking toe is an important feature.

TTD:3-46.

NYLON HOSIERY. Valuable suggestions for nylon f. f. hosiery manufacture. Anon. *Rayon Textile Monthly 26,* 639-43 (Dec. 1945).

PVA (polyvinyl alcohol water soluble) sized nylon yarn is discussed with respect to its ultimate manufacture into hosiery. Knitting, boning, seaming, dyeing, finishing and boarding are dealt with.

TTD:3-46.

KNITTED FABRIC. Harry Fleisher (to Princeton Inc.). USP 2 191 883, Feb. 27, 1940, reissue Re 22 711, Jan. 22, 1946.

A novel form of run-resisting knitted fabric has repeating sequences of tucks, plain stitches and laid-in yarns separated from one another by floats.

TTD:3-46.

KNITTING NEEDLE. Robt. Peel (to F. N. F., Ltd.). USP 2 393 931, Jan. 29, 1946.

An improved machine knitting needle has a tubular guide for a tongue and a strip ending in a hook brazed to it and integrally joined in such a way that the yarn in passing along the needle from the hook is not frayed.

TTD:3-46.

HOSIERY KNITTING. A. L. Hunt (to G. Edwards & Sons, Ltd.). Brit. P. 569 *727. Textile Mfr. 71,* 548 (Dec. 1945).

Knitting a stocking toe on a circular knitting machine consists in reciprocating knitting on a complement of needles disposed in successive tricks that progressively reduce the number of needles for a certain number of courses and then increase them to a number less than the original complement. TTD:3-46.

KNITTING NEEDLE. S. J. Everett. Brit. P. 570 060. *Textile Mfr. 71,* 549 (Dec. 1945).

Tubular knitting needle has a hook at one end.

TTD:3-46.

KNITTING. C. Koppel. Brit. P. 570 116. *Textile Mfr. 71,* 549 (Dec. 1945).

Needles and jacks of a knitting machine have channels provided with scraping edges at the bottom which keep needles and jacks free from foreign particles.

TTD:3-46.

KNITTING. B. T. & J. M. Cole. Brit. P. 570 180. *Textile Mfr. 71,* 550 (Dec. 1945).

A fabric with true selvedge edge is made during plating or splicing by feeding float threads to the needles without being cut. TTD:3-46.

KNITTING NEEDLE. Chas. L. Page. Can. P. 432 375-6, Jan. 8, 1946.

An improved independent sinker operates with an independent needle in a knitting machine to draw a stitch shorter than standard. TTD:3-46.

Narrow fabrics — IV 6

BELTS. Paul D. Suloff (to Wingfoot Corp.). Can. P. 432 902, Jan. 29, 1946.

A conveyor belt is formed of lengthwise flexible steel cables imbedded in rubber, with an adherent rubberized fabric covering having an undulating surface.

TTD:3-46.

Fabric applications — IV 9

COATED FABRICS. Latest developments in coating textile fabrics. *Plastics Catalogue* 840-4 (1944); *Rayon Textile Monthly 26,* 651-3 (Dec. 1945).

A background of coating, stretching back into the middle ages is given, followed by descriptions of coated fabrics used in war service: raincoats, life preservers, upholstery, aeronautical products, etc. TTD:3-46.

COATED FABRICS. New development in coated fabrics. F. R. Price. *Du Pont Mag. 39,* No. 5, 14-6 (Dec. 1945).

War-developed coated fabrics are described: Fabrikoid (pyroxylin) and Cavalon (neoprene or chloroprene rubber). TTD:3-46.

FABRIC BASE PLASTICS—a reconnaissance. F. T. Barwell & K. W. Pepper. *Chem. Ind. 51,* 411-2 (Dec. 29, 1945).

Results of tests on 8 sets of differently treated unscoured cotton cambrics, made to obtain a better material for aircraft construction, are reported. Two anomalies appear: (1) specific tensile strength remains constant; (2) stiffness increases above the limiting pressure (about 200 lbs. psi). About 30% resin content gives optimum specific strength. TTD:3-46.

KNITTED JACKETS. Milton D. Swartz & Kinloch N. Yellott (to Farboil Paint Co., Inc.). USP 2 391 931, Jan. 1, 1946.

A loosely knit tubular jacket will replace the usual tightly braided jacket as a protective covering for insulated wire at considerable economy of production. To render this jacket properly weather resistant it is impregnated with a suitable saturant (e. g. *77.2%* ester gum and *22.8%* soybean oil) which when cool makes the core and jacket tightly adherent and yet pliable.

TTD:3-46.

FABRIC BACKING. Ralph H. Hurd (to U. S. Gypsum Co.). USP 2 392 923, Jan. 15, 1946.

In the manufacture of plasterboard, with depressed edges to permit joining, an improved crimping device is employed for the fabric backing of the gypsum which produces smooth flat surfaces without the bowing and distortion often encountered hitherto. TTD:3-46.

COATED FABRIC. Mark Balkin (to Sillick Holding Co., Ltd.). USP 2 392 967, Jan. 15, 1946.

A light tubular knit fabric, after being treated with a thin coating of rubber latex (0.01"), is drawn through an outer envelope (canvas fire hose) and tightly vul-

canized thereto. The hose thus formed is considerably cheaper in construction than former types, is much lighter, allows of more compact coiling and storage and is as watertight as much heavier types.
TTD:3-46.

GLASS INSULATING. Jos. M. Harris (to Bentley, Harris Mfg. Co.). USP 2 393 530, Jan. 22, 1946.

In order to overcome the fraying that generally accompanies cutting "Fiberglas" tubing used as insulation for electric wire, the tubing is "set" by passing it through a heating unit at a rate 7500 ft/hr. at a temperature of 1200-1500°F, which causes a slight softening of the fibers. TTD:3-46.

SHIRT COLLARS. Jno. H. Skinkle & Louis Weinstein (to Phillips-Jones Corp.). USP 2 393 828-9, Jan. 29, 1946.

By disposing face- and rear-ply weft threads perpendicular to the lengthwise extent of the fold in a multi-ply collar and by weaving face- and rear-ply warp threads with these weft-threads respectively an improved wear-resistant collar is formed. This type of construction, eliminating the movement of face warp and giving tighter binding of face and rear plies, effects longer wear. TTD:3-46.

COATED FABRIC. Brit. Celanese, Ltd. Brit. P. 569 979. *Textile Mfr. 71,* 549 (Dec. 1945).

A coated fabric (such as for airplanes) is composed of base coating of cellulose ester and a water-resistant coating bonded together. TTD:3-46.

STIFFENED FABRIC. Camille Dreyfus. Can. P. 431 572, Dec. 4, 1945.

Stiffened fabrics are produced by bonding a nonthermoplastic fabric to a fabric containing thermoplastic cellulose acetate having an acetyl value of 40-45%.
TTD:3-46.

LAMINATE. Camille Dreyfus. Can. P. 431 573, Dec. 4, 1945.

Laminated paper sheets are made of a paper impregnated with cellulose acetate fibers of about 40-45% acetyl value, the paper stock being rolled out into sheets which are then bonded together under heat and pressure. TTD:3-46.

FLEXIBLE HOSE. Bernard Wilkinson (to Wilkinson Rubber Linatex, Ltd.). Can. P. 432 727, Jan. 22, 1946.

A flexible hose has a core of coiled rayon wire having an inner and 2 outer layers of rubberized fabric bonded to it. TTD:3-46.

CREPING. Wm. W. Rowe (to Cincinnati Industries, Inc.). Can. P. 432 828, Jan. 29, 1946.

A continuous web of cloth while under strong lengthwise tension, which causes the cloth to contract laterally (weftwise), is creped by treating with a thin adhesive coating of thermosetting synthetic resin.
TTD:3-46.

SPECIAL PROBLEMS IN BONDING AND COATING. Booklet of Angier Products, Inc., 120 Potter St., Cambridge 42, Mass. 1945; 16 pp.

Reviewed in *India Rubber World 113,* 433 (Dec. 1945). TTD:3-46.

CHEMICAL RAW MATERIALS V

Plastics V 1

RESINS for textiles. J. Edw. Lynn, Am. Cyanamid Co. *Am. Dyestuff Reptr. 34,* 506-7, 510 (Dec. 3, 1945).

Resins as applied to consumer textiles are briefly surveyed. For crease resistance urea-formaldehyde resins are most in use; for shrinkproofing of wool the melamine resins are most effective. Thermoplastic and thermosetting resins in combination can give various useful effects. TTD:3-46.

REVIEW OF PLASTIC MATERIALS. Harold L. Brouse, Crosley Corp. *Proc. Inst. Radio Engrs. 33,* 825-34 (Dec. 1945).

A representative list of plastic materials is presented, classified according to thermal characteristics and fabrication methods along with their particular properties. Trade names and manufacturers follow.
TTD:3-46.

VINYON SHIRTS. Acid-resistant shirts. Anon. *Chem. & Met. Eng. 52,* No. 12, 144 (Dec. 1945).

Loosely woven porous shirts woven of Vinyon, to be worn around rayon spinning baths, are acid-resistant.
TTD:3-46.

PLASTICS. LaVerne E. Cheyney (to Wingfoot Corp.). USP 2 380 925, Aug. 7, 1945.

Plasticizers such as capramide and lauramide used in polyvinyl acetal compositions, in amounts of 5-50%, tend to decrease ultimate tensile strength but to increase ultimate elongation. Plastic foils about 2 mils thick may be used in the fabrication of raincoats, shower curtains, umbrellas, etc. TTD:3-46.

PLASTICS AND ULTRAVIOLET. Wm. Horback (to Celanese Corp. of Am.). USP 2 386 855, Oct. 16, 1945.

Ultraviolet light absorption in plastics is increased by incorporating into the material from 0.10 to 5% of a fluoranthene compound. Absorption qualities are not lost by exposure to the sun or other strong light. The fluoranthene compound has a plasticizing effect, on cellulose derivatives especially. The products are useful in photographic filters, covers or wrappers for photochemically sensitive foods, protective covers for documents, interlayers in safety glass, goggles for welders and aviators, gas mask lenses or any purpose requiring opacity to ultraviolet light. TTD:3-46.

PLASTIC PRODUCTS. Zachary T. Walter. USP 2 393 437, Jan. 22, 1946.

Various plastic products may be shaped on a matrix by

impregnating fabric sheets (e. g. burlap) in superposed layers with a solution approximately consisting of ethyl acetate 40, isopropyl alcohol 20, toluene 5 and benzene 35 vol.-% to which is added ethylcellulose (13 wt.-%). Instead of the air-conditioning usually required for such operations, this process may be carried out under normal atmospheric conditions.
TTD:3-46.

CELLULOSE PLASTICS. Lester W. A. Meyer & Wm. M. Gearhart (to Eastman Kodak Co.). USP 2 393 794, Jan. 29, 1946.

To inhibit the effect of ultraviolet rays on cellulose ester plastics, a small amount of resacetophenone (about 1-2%, based on the wt. of cellulose acetate) is added to the composition. TTD:3-46.

CELLULOSE PLASTICS. Donald R. Morey & Robt. L. Tichenor (to Eastman Kodak Co.). USP 2 393 801-2, Jan. 29, 1946.

To prevent deterioration of plastic compositions by the ultraviolet rays of the sun, 1-2% of 3-ethyl-2-phenyliminobenzothiazoline is added to the cellulose acetate; or NN′-diphenyl acetamidine may be used instead.
TTD:3-46.

CELLULOSE ETHERS. Walter H. Groombridge & Jno. Downing (to Camille Dreyfus). Can. P. 432 736, Jan. 22, 1946.

Cellulose is impregnated with aqueous NaOH, any excess of which is removed after heating about 10 min. Toluene is then added and the water is distilled off. Diethyl sulfate is introduced and the reaction mixture boiled for about 2 hrs. This process is repeated through 2 or more reaction stages to produce ethylcellulose. TTD:3-46.

CELLULOSE ETHERS. Camille Dreyfus. Can. P. 432 740, Jan. 22, 1946.

In etherifying cellulose, diethyl sulfate is used in presence of an inorganic base and of at least 40-wt.% N-tetraethyl ethylenediamine. Other dialkyl sulfates may be used as the etherifying agent, with at least 20 wt.-% tertiary organic base. TTD:3-46.

CELLULOSE ACETATE. Booklet of Hercules Powder Co., Wilmington 99, Del., 1945.

Reviewed in *Elec. World 124,* No. 25, 124 (Dec. 22, 1945). TTD:3-46.

NEW PLASTICS. Herbert R. Simonds, M. H. Bigelow & Jos. V. Sherman. D. Van Nostrand Co., Inc., New York, N. Y., 1945; 320 pp.; price $4.50.

Reviewed in *Science 102,* 600 (Dec. 7, 1945).
TTD:3-46.

PLASTICS. J. H. duBois, Am. Technical Soc., Chicago, Ill. 1945; 447 pp.; price $4.00.

Reviewed in *Chem. Eng. News 23,* 2264 (Dec. 10, 1945). TTD:3-46.

PLASTICS IN PRACTICE, A HANDBOOK OF PRODUCT APPLICATIONS. J. Sasso & M. A. Brown, Jr., McGraw-Hill Book Co., New York, N. Y. & London, Eng., 1945; 185 pp.; price $4.00.

Reviewed in *Elec. Eng. 64,* 470 (Dec. 1945).
TTD:3-46.

TECHNOLOGY OF PLASTICS AND RESINS. J. Philip Mason & Jos. F. Manning, D. Van Nostrand Co., Inc. New York, N. Y., 1945; 493 pp.; price $6.50.

Reviewed in *Chem. Eng. News. 23,* 2264 (Dec. 10, 1945). TTD:3-46.

Elastomers V 2

ELASTOMERS. Molecular processes during deformation of rubber-like elastic bodies. Kurt H. Meyer & A. J. A. Van Der Wyk. *J. Polymer Research 1,* 49-57 (Jan. 1946).

A qualitative discussion of the theory of rubber elasticity is offered. No satisfactory quantitative theory exists, at present, for the explanation of rubber-like behavior. TTD:3-46.

WIRE INSULATION. Promise of synthetics as wire and cable insulations. R. B. McKinley, Gen. Electric Co. *Elec. World 24,* No. 25, 52-5 (Dec. 22, 1945).

Properties of synthetic rubbers are compared as to insulating effectiveness, with emphasis on wearing qualities. Synthetics considered are: Buna S, Buna N, Butyl, polyethylene, polyvinyl-chloride, and neoprene. Graphs accompany. TTD:3-46.

Adhesives V 3

ADHESIVES. Jan Teppema & Jos. F. Manning (to B. B. Chemical Co. of Can., Ltd.). Can. P. 431 615-6, Dec. 4, 1945.

In 2 liquid adhesive compositions comprising butadiene-acrylonitrile copolymer, pyroxylin is used in the one as a toughener and vinyl chloridevinyl acetate copolymer in the other, in wt. ratios from 1:2 to 2:1 for each. The products are useful as cements for fibrous materials such as leather. TTD:3-46.

Surface-active compounds V 4

SYNTHETIC DETERGENTS. Anon. *Rayon Textile Monthly 26,* 666 (Dec. 1945).

Synthetic detergents were first importantly used in textile processing. No single synthetic detergent is yet universally successful. TTD:3-46.

KERATIN. Physiochemical characterization of dispersed chicken feather keratin. Wilfred H. Ward, Loretta M. High and Harold P. Lundgren. *J. Polymer Research 1,* 22-35 (Jan. 1946).

Reduced chicken feather keratin forms a soluble complex in neutral aqueous sodium alkylbenzenesulfonate. The chemical composition, specific refractive increment, partial specific volume, electrophoretic mo-

bility, osmotic pressure, diffusion constants, and ultracentrifugal sedimentation of the complex were studied. The complex with the detergent is similar to egg albumen detergent complex mixtures, including its fiber forming properties. TTD:3-46.

RUBBER COATING. Lloyd Lyn Leach (to E. I. duPont de Nemours & Co.). USP 2 391 986, Jan. 1, 1946.

A protective covering to preserve the tacky surface of unvulcanized rubber, e. g. camel back, is formed of a polyvinyl alcohol film. This coating is tear-resistant and gasproof and, while adhering closely to the rubber, may be easily removed and reused.
TTD:3-46.

CHEMICAL PROCESSING VI

ATMOSPHERIC EFFECTS in textile processing. Technicus. *Textile Recorder 63,* No. 753, 51-2, 63 (Dec. 1945).

The many and varied effects of atmospheric conditions on textile fabrics are briefly considered. Heat and cold, humidity and light, and their effect on finishing processes are noted. TTD:3-46.

CELLULOSE DEGRADATION. Degradation of cellulose by certain metallic salts. F. L. Allen & E. A. Rudge. *J. Soc. Chem. Ind. 64,* 332-4 (Dec. 1945).

A dissertation examining the degradation of cellulose by such reagents as Ca bicarbonate, Ca glycolate, etc. In all cases the cotton cellulose is soaked in a solution of the reagent and then dried for 3 hours at 65°C. Losses in cuprammonium viscosity occur with increase in Cu number and pentosan content.
TTD:3-46.

SARAN. Polyvinylidene chloride. Jas. Taylor. *Brit. Plastics 17,* 490-6 (Dec. 1945).

Polyvinylidene chloride, or Saran, discovered a century ago, has come into serious commercial use in the past six years. A white solid and thermoplastic, it is readily colored. Because its reactions are catalyzed by Fe, some alloy free from Fe is best used in molding it. In monofil form it has a number of uses: rope, screening, webbing, etc. It is particularly suitable in screens because of its corrosion resistance to salt-spray and acetic fumes. TTD:3-46.

SCOURING AND MILLING. Anon. *Wool Record & Textile World, 68,* 1162, 1164, 1166 (Dec. 27, 1945).

Scouring and milling operations are discussed. The alkaline and acid methods are considered, and cautions to be observed in avoiding streakiness and uneven cover are given. TTD:3-46.

TEXTILE PROCESSING during 1945. Anon. *Textile Weekly 36,* 1202, 1204, 1206, 1208, 1210, 1264, 1266, 1268 (Dec. 21, 28, 1945).

Textile processing developments and advances, especially in the light of the war's end, are reviewed. Bleaching, dyeing, printing, and finishing are discussed. TTD:3-46.

TEXTILE PROCESSING. New concepts in textile processing. President of E. F. Houghton & Co. *Houghton Line 14,* No. 2 (Aug.-Sept. 1945); reprinted in *Rayon Textile Monthly 26,* 584-6 (Nov. 1945).

Chemical processing of textiles is briefly commented on: waterproofing, finishing, sizing, etc.
TTD:3-46.

Preparation VI 1

COTTON SCOURING TEST. Practical laboratory test for evaluating scouring agents for cotton. O. C. Bacon, E. I. duPont de Nemours & Co. *Am. Dyestuff Reptr. 34,* P556-61 (Dec. 31, 1945).

A test for cotton scouring agents uses a Launderometer as a scouring machine operating at 60 rpm. instead of 42 rpm. as heretofore. A standard soiling composition consists (by grams) of lamp black 60, vegetable oil 180, mineral oil 258, starch 120. Cotton sheeting of 75% whiteness, as related to MgO, is used; when soiled it should have 20-25% whiteness. Graphs and tables of results are included. Accuracy of the test depends on 3 factors: (1) duplication of dirty material; (2) reproducibility in Launderometer; (3) effect of age on the dirty material.
TTD:3-46.

DECATING. Semi- and full decating methods described. Anon. *Am. Wool & Cotton Reptr. 59,* No. 52, 11, 13, 39 (Dec. 27, 1945).

Open and vacuum steam (semi- and full decating) methods are discussed, the semi-decating being more popular today. For setting cloth and retarding shrinkage the full decating is more satisfactory but harder to handle as the aprons require constant attention and the machine needs a more competent operator.
TTD:3-46.

FLAX RETTING. C. B. Taylor, A. Parker & B. A. Southgate. Brit. P. 569 849. *Textile Mfr. 71,* 548 (Dec. 1945).

Water for retting flax is given an oxidizing treatment which permits its reuse without dilution.
TTD:3-46.

WOOL RESEARCH problems. Anon. *Can. Textile J. 62,* No. 25, 47 (Dec. 14, 1945).

Wool carbonizing and scouring assistants are chemical problems; reducing the number of operations in worsted drawing is a mechanical problem needing attention. TTD:3-46.

FIBER TREATMENT. Wm. J. Burke (to E. I. duPont de Nemours & Co.). USP 2 391 942, Jan. 1, 1946.

In order to render cellulosic fibers, when mixed with wool, receptive to chrome and acid dyes as well as direct dyes, they are treated with an aqueous solution of formaldehyde, acid catalyst, and a tertiary alkanolamine salt. This process also improves crease resistance. TTD:3-46.

FABRIC PREPARATION. Albert Mellor & Robb Martin (to Celanese Corp. of Am.). USP 2 392 939, Jan. 15, 1946.

In a washing operation to produce acetate rayon crepe fabric designs a rotating perforated metal drum permits free shrinkage of the material during treatment and at the same time prevents creasing. TTD:3-46.

CLOTH DRIER. K. S. Laurie (to J. Dalglish & Sons). Brit. P. 569 706. *Textile Mfr. 71,* 548 (Dec. 1945).

Cloth driers for use in stenters consist of upper and lower slotted boxes having inlets extending the width of the cloth. Each box has a pair of heaters with electric exhaust fans. TTD:3-46.

FELTING. W. O. Street. Brit. P. 569 796. *Textile Mfr. 71,* 548 (Dec. 1945).

A conveyor mechanism carries the partly felted lap through the hardening apparatus. TTD:3-46.

DRIER. L. F. Broad (to Lister Bros., Ltd.). Brit. P. 570 541. *Textile Mfr. 71,* 552 (Dec. 1945).

A fabric drying machine is in 3 sections: (1) a chamber with 2 compartments (one with hot, dry air; the other with cooler, more humid air), (2) a drying cylinder, (3) a cylinder for tumbling and partially (or completely) drying fabric. TTD:3-46.

FABRIC SPRAYER. E. F. Hunt (to Hunt & Moscrop, Ltd.). Brit. P. 570 840. *Textile Mfr. 71,* 552 (Dec. 1945).

Damping machines, with traps to prevent moisture running down fabric, spray both faces of the fabric. TTD:3-46.

Alkali baths — VI 5

EMULSIONS and their applications to textiles. Harvey A. Neville, Lehigh Univ. *Am. Dyestuff Reptr. 34,* P534-6 (Dec. 17, 1945).

Because of a high ratio of surface to volume or weight possessed by textiles and also because of many wet operations used in processing it is suggested that the use of emulsions would be appropriate. TTD:3-46.

MERCERIZATION. B von Becker (to Schering A/G). Swed. P. 112 767, Dec. 13, 1940; *Svensk Papperstidning 48,* 5 (Jan. 15, 1945).

The wetting power of mercerizing lye for fiber is increased by adding isopropylphenol to the lye. TTD:3-46.

Sizing — VI 6

WARP SIZING fine nylon yarns. Anon. *Rayon Textile Monthly 26,* 638 (Dec. 1945).

Glue sizing of 40 denier 13 filament nylon yarn is noted. TTD:3-46.

Finishing — VI 7

FINISHES. Fashions in textile finishes. Virtex. *Textile Recorder 63,* No. 753, 49-50 (Dec. 1945).

Plastics and their relation to wool are discussed. TTD:3-46.

RAISED WOOLEN COATINGS. Protex. *Wool Record & Textile World 68,* 1104-5 (Dec. 20, 1945).

The raising process emphasizes textural quality. When warp is appreciably finer than weft, a greater proportion of weft may be presented to raising action. Various examples to be obtained are given, such as a tweed in 2-fold yarn from a mixture of 7 mohair noils and wool. TTD:3-46.

TEXTILE FINISHING. Ira. L. Griffin, Dave E. Truax & Norman H. Nuttall (to Stein, Hall & Co., Inc.). USP 2 381 587, Aug. 7, 1945.

In sizing and finishing textile fibers and fabrics an improved method employs a fixative such as K pyroantimonate and a binder such as starch, applied together or independently. This is cheaper than former methods and also permits use of cheaper dyes with equal effect. TTD:3-46.

SIZING AND FINISHING. Fred G. LaPiana & Herman S. Bosland (to Stein, Hall & Co., Inc.). USP 2 385 714, Sept. 25, 1945.

Textile materials are treated with a finishing composition containing 50-90% starch compounded with urea-aldehyde resin and a polyvinyl alcohol in the ratio 1:1. A crispness, such as in organdy, is imparted to the material, and shrinkage is prevented. TTD:3-46.

TEXTILE FINISHING. Jack T. Thurston (to Am. Cyanamid Co.). USP 2 385 765-6, Sept. 25, 1945.

Textile materials are treated with water-repellent compositions of the higher alkyl guanamines and aldehyde resins. Improved water-resistance and better "hand" result along with a longer life and greater permanency. Example: With 1% of stearoguanamine in ammonia a cotton percale was given a soft hand and noticeable water repellency; with 10% of stearoguanamine the hand was harsher but water-repellency was good. TTD:3-46.

RESIN FINISHES. Firma Hermann Schubert. Swed. P. 112 156, July 4, 1940; *Svensk Papperstidning 48,* 89 (Feb. 28, 1945).

Textile products made of natural or regenerated cellulose, alone or blended with other fibers, are impreg-

nated with an aqueous solution of resinifiable components (e. g. phenol or urea and formaldehyde), then heated to form and set the resin. Creaseproofing and improved handle are among the effects obtainable in this way. TTD:3-46.

FINISHING RAYON. Chemische Fabrik Pfersee G. m. b. H. Swed. P. 113 157, Sept. 20, 1941; *Svensk Papperstidning 48,* 89 (Feb. 28, 1945).

Rayon or rayon staple fiber yarns or fabrics are improved by the formaldehyde treatment in aqueous solution, using a catalyst such as SO_2 to obtain the best effect. TTD:3-46.

FINISHING FABRICS. F. Drechsel. Swed. P. 113 420, Dec. 12, 1940; *Svensk Papperstidning 48,* 31 (Jan. 31, 1945).

Textile fabrics are improved in properties and appearance by a treatment with cuprammonium cellulose solution in an early stage of finishing. TTD:3-46.

COLOR VII

COLOR AS APPLIED TO TEXTILES. Alex J. Bennett. *Textile J. of Australia 20,* 352, 354, 404, 458-9 (Dec. 1945).

Color effects in textiles may be obtained by blending different colors of fiber in a mixed yarn, or different colors of yarn in a fabric, as well as by dyeing the woven or knit fabric. Many variations in color effect can also be obtained by variations in the weave. Twist is an important factor and can be utilized to produce stripes and checks by varying the reflection of light. Complementary colors harmonize and are pleasing to the eye. TTD:3-46.

DYEING AND PRINTING IN GERMANY. F. S. Richardson. *Textile Mfr. 71,* 540-2 (Dec. 1945).

Textile team reports on a rayon staple fiber with a high degree of water repellency and abrasion resistance used in shelter halves and jackets. The cloth was usually printed green on one side and brown on the other (for use in Russia one side was left white). German research on detergents and emulsifiers was extensive. TTD:3-46.

DYES. Alphabetical list of new products developed since Nov. 1944. Anon. *Am. Dyestuff Reptr. 34,* 477-90 (Dec. 3, 1945).

An alphabetical list of new dyes, textile chemicals and equipment developed since Nov. 1944, is given along with a brief description of each product. TTD:3-46.

RAYON DYEING and finishing developments. Wm. F. Brosnan, Verney Mills. *Am. Dyestuff Reptr. 34,* 491-2, 509-10 (Dec. 3, 1945).

Rayon treatment from dyeing through finishing is briefly considered; bleaching is mentioned as seldom required. Dyeing of nylon and blended fabrics is also discussed. TTD:3-46.

Bleaching VII 1

CHLORITE BLEACHING. Oxidation potentials of chlorine dioxide and sodium chlorite in aqueous solution. Gustaf Holst. *Svensk Papperstidning 48,* 23-30 (Jan. 31, 1945) (in German).

The oxidation potential of Na chlorite in acid solution (pH approximately 5) is about 0.75 volt, as compared with about 1.05 volt for alkaline hypochlorite at pH approximately 9. The oxidizing action of ClO_2 in aqueous solution is faster and more intense than that of Na chlorite. For this reason ClO_2 should theoretically be a better bleaching agent than in Na chlorite, but the chlorite reaction is easier to control and has some advantages over the ClO_2 reaction in practical applications to bleaching. TTD:3-46.

BLEACHING BATHS. Henkel & Cie. Swed. P. 112 927, June 11, 1941; *Svensk Papperstidning 48,* 61 (Feb. 15, 1945).

Acid bleaching baths are stabilized by adding a solution of waterglass containing salts of Al or of an alkaline earth metal. TTD:3-46.

Dyeing VII 2

COLORING OF PLASTICS. C. R. M. Oehlcke. *J. Soc. Dyers Colourists 61,* 306-10 (Dec. 1945).

Four ways of coloring plastics are listed: (1) surface dyeing (2) surface lacquering (3) using soluble dyes (4) using organic or inorganic pigments. The last two methods are described in some detail particularly as to the dyes and pigments suitable with various types of plastics. Coloring of the more modern plastics is best done with insoluble pigments because while most acid dyes have good solvent fastness they have poor light-fastness. TTD:3-46.

DYE TEMPERATURE CONTROL. Dye liquor temperature rise now under automatic control. Walter H. Ridley, Foxboro Co. *Textile Age 9,* No. 12, 100, 102, 104 (Dec. 1945).

Complete automatic control of the dye-temperature cycle is announced and described. TTD:3-46.

DYEING. Rotary vs. paddle dyeing machinery. Jos. L. Wauthers. *Southern Knitter 9,* No. 12, 30, 33 (Dec. 1945).

A comparison is made, point by point, of the advantages and disadvantages of rotary and paddle dyeing machines. TTD:3-46.

DYES. Dyeing and dyed textiles. O. W. Clark, Am. Cyanamid Co. *Rayon Textile Monthly 26,* 663-5 (Dec. 1945).

A concise historical background of dyeing is given for sulfur, vat, azo, acid, chrome and metallized dyes. TTD:3-46.

DYESTUFF NOMENCLATURE. C. L. Bird, *J. Soc. Dyers Colourists 61,* 321-8 (Dec. 1945).

A comprehensive list of British, French and Swiss dyes (their commercial names, manufacturers, composition and uses.). TTD:3-46.

HOSIERY. Transition from military to civilian hose. O. B. Charles. *Southern Knitter 9,* No. 12, 38, 39, 58-9 (Dec. 1945).

Suggestions are made to hosiery manufacturers for utilization of whatever odds and ends of yarns they may have available; the dyeing of these yarns is especially considered. TTD:3-46.

LEATHER DYEING. Methods of dyeing leather. Prefex. *Dyestuffs 39,* No. 1, 8-12 (Dec. 1945).

A brief history of leather dyeing methods from the earliest (by dipping) to the latest (by cylindrical drum). TTD:3-46.

MIXED FIBER FABRICS. Anon. *Textile Colorist 67,* 164-5, 192, 197 (Dec. 1945).

Varying problems encountered in dyeing of mixtures of natural and synthetic fibers are discussed and suggestions made. TTD:3-46.

NATURAL DYES. Some natural dyes give long life to cotton fabric. Margaret S. Furey. USDA Agricultural Research Administration. *Rayon Textile Monthly 26,* 603-5 (Nov. 1945).

Mildew resistance of 15 natural dyes on cotton osnaburg, tested by soil-suspension method, proved excellent. After 6 weeks of weathering 4 are still effective against mildew and show only light attack by termites. TTD:3-46.

NYLON DYEING. Handy guide for the nylon dyer. Anon. *Fibers 6,* 182-3 (Dec. 1945).

Comments on particular characteristics of nylon in dyeing. TTD:3-46.

NYLON DYEING. Serisol dyestuffs on nylon. Anon. *Dyer 94,* 520 (Dec. 21, 1945).

Series of shades of Serisol dyes on nylon yarn is shown on a pattern card. Other color cards are described. TTD:3-46.

PIECE-DYEING woolen and worsted piece dyeing. Anon. *Wool Record & Textile World 68,* 1063 (Dec. 13, 1945).

Close coöperation is advised between the scourer and dyer in order to avoid stains, unevenness, creases, listedness, ending, etc. Dyeing in hard water poses an added problem to the dyer. TTD:3-46.

SYNTHETIC FIBER DYEING. Synthetic Fibers. Anon. *Dyer 94,* 493-4 (Dec. 7, 1945).

Caution against tendering is necessary in treating cotton, rayon and other cellulose materials with mineral acids. In crease-resistant finishing urea-formaldehyde resin is effective and yet not tendering because of the

neutralizing effect of urea. In alkaline black dyeing, requiring enough acid to produce tendering, 90% of the tendering is eliminated by addition of a substance that will tender more readily than the cotton or rayon, e. g. replacing some of the mineral acid with acetic acid; a second dyeing, however, gives the best results, the first dyeing apparently building resistance tendering. TTD:3-46.

WOOL DYEING. Importance of pH and grease residue within the fiber. Arthur N. Patterson, S. Stroock & Co. *Textile J. of Australia 20,* 491-2 (Dec. 20, 1945).

Because of importance of pH control of dyebaths experiments were performed on 2 distinct wool types to determine grease residue. Results are discussed; dye absorption varies in proportion to amounts of grease residue within the fiber. TTD:3-46.

WOOLEN CONTRARIES. Dyeing contraries woolen rags. Anon. *Dyer 94,* 473-4 (Dec. 7, 1945).

Woolen rag stock (contraries) contains rayon, cotton, line, jute, etc. in addition to wool. Hand-sorting will dispose of some undesirable elements; carbonizing will destroy others. Sorted carbonized contraries offer little difficulty in redyeing; uncarbonized contraries, however, because of rayon and vegetable fibers present are often troublesome. Because of wide shade variations decolorizing is frequently necessary before redyeing and this should best be done in stone or wooden vessels. TTD:3-46.

CELLULOSE ACETATE DYES. Henry C. Olpin, Edmund Stanley & Christopher S. Argyle (to Brit. Celanese, Ltd.). USP 2 393 652, Jan. 29, 1946.

Dyeing of cellulose acetate fibers, foils, films, etc., can be accomplished with various dyes (e. g. azo, anthraquinone, and nitrodiarylamine) which are fast to washing and have little bleeding; they all carry long chain aliphatic substituents linked to the dye molecule directly or through N, S or O bridging atoms or groups. They do not color the acetate by conventional dyeing methods; instead the dye is dissolved or dispersed in the acetate spinning dope. Example: A dope composed of cellulose acetate and acetone in the ratio 1:3 is dyed with 0.1% of 4-nitro-4′-diethylamino-2′-stearoylaminoazobenzene. TTD:3-46.

DYEING CELLULOSE. I. G. Farbenindustrie A.-G. Swed. P. Appl. 2717/44, April 1, 1944; *Svensk Papperstidning 48,* 61 (Feb. 15, 1945).

A process for improving the fastness of substantive dyes on cellulosic fibers. TTD:3-46.

Vat dyeing — VII 2 c

FADING and tendering of vat dyes. Y. M. Waly, J. M. Preston, F. Schofield and H. A. Turner. *Can. Textile J. 62,* No. 26, 41-2 (Dec. 28, 1945).

Tendering is more marked in yellow, orange and red

vat dyes; it is rare in blue or green. There are 2 generalizations: (1) under illumination the more active the dye the more negative becomes the characteristic potential; (2) in a compound dyeing of 2 vat dyes, one active and the other inactive, the characteristic potential is in relative proportion to the amount of the 2 dyes present. TTD:3-46.

VAT DYEING. Some fundamental principles of vat dyeing. O. W. Clark, Am. Cyanamid Co. *Am. Dyestuff Reptr. 34,* P546-555 (Dec. 31, 1945).

General dye characteristics modifying and controlling dyeing behavior, and effect of temperature on reduction rates are considered, and illustrated with numerous photographs and charts of tests. In these tests use was made of a "Dyeometer" along with a spectrophotometer and other more common equipment. TTD:3-46.

VAT DYES. New horizons for vat-dyed colors in linens and domestics revealed by DuPont. Anon. *Linens & Domestics 31,* No. 3, 60; *Textile Age 9,* No. 12, 118, 120 (Dec. 1945).

Vat dyeing is broadened by newer pad-steam and multilap dyeing methods. TTD:3-46.

Printing — VII 3

PIGMENTS ON TEXTILES. Anon. *Rayon Textile Monthly 26,* 606 (Nov. 1945).

Sharpness and contrast are achieved by use of pigments. Application of pigments by emulsions reduces the amount of harshness and poor hand. TTD:3-46.

WOOL PRINTS. The printing of woolens. Wm. D. Baird. *Am. Dyestuff Reptr. 34,* 508-9 (Dec. 3, 1945).

Wool printing is briefly surveyed, with several different types of print pastes being given along with a list of suitable dyes and colors. TTD:3-46.

TEXTILE PRINTS. Jno. R. Abrams (to Interchemical Corp.). USP 2 381 868, Aug. 14, 1945.

Printing on fabric is improved by the use of colored lacquers whose binders are mixtures of urea-formaldehyde resin and methyl abietate in ratios from 4:1 to 1:1. With these pastes cheaper pigments may be used; and the after-treatment of washing out the thickening agent, necessary previously, is avoided. TTD:3-46.

TEXTILE PRINTS. Norman S. Cassel (to Interchemical Corp.). USP 2 381 878, Aug. 14, 1945.

A printing paste containing urea-formaldehyde resin and cellulose ether in varying proportions of from 1:20 to 1:1 gives good results, with improved wash-resistance and complete indifference to dry cleaning solvents. Example: A paste containing 4% benzylcellulose and 5% Beetle Resin 227-8 gives exceptionally durable cotton prints, fast both to laundering and to dry cleaning. TTD:3-46.

FABRIC PRINTING. A. E. Hills. Brit. P. 569 901; 569 907. *Textile Mfr. 71,* 549 (Dec. 1945).

Fabric is printed by passing it between 2 rollers and spraying color through stencils on one side, exposing the other side to suction during the process. TTD:3-46.

Color measurement — VII 4

COLOR MEASUREMENT. Direct-reading photoelectric colorimeter. B. T. Barnes, General Electric Co. *Rev. Sci. Instruments 16,* 337-9 (Dec. 1945).

A 4-filter photoelectric colorimeter announced in 1939 is made a direct reading instrument. It is also suited for direct-reading photometry. TTD:3-46.

COLORS. Are new colors limitless? Dorothy Nickerson, USDA Production & Marketing Administration. *Rayon Textile Monthly 26,* 595-600 (Nov. 1945).

New colors are not limitless, particularly in the blue-greens and purples; limits are being approached in the yellows, oranges and reds. Color limits and their measurements are discussed in terms of the Munsell system with the aid of tables and a master hue chart. TTD:3-46.

DYEING SHADES. AATCC discusses shade depth. Anon. *Cotton* (Atlanta) *109,* No. 12, 124; *Textile Age 9,* No. 12, 60, 62 (Dec. 1945).

Depth of shade in dyeing on cotton (mercerized and unmercerized) and rayon does not seem to depend upon affinity of certain fibers for dyes. After plant trials it was found that 3 factors are responsible; additional color absorbed, difference in reflectance between rayon and cotton, difference in penetration. TTD:3-46.

PROOFING — VIII

WEATHERPROOFING of tent cloth by synthetic resin process. Anon. *Silk & Rayon 19,* 1359 (Dec. 1945).

Tent cloth is made resistant to fire, water and mildew by impregnation with a combination of Amberol resins and a rosin-modified phenolic resin. TTD:3-46.

Waterproofing — VIII 1

PAPER COATING. LaVerne E. Cheyney (to Wingfoot Corp.). USP 2 392 972, Jan. 15, 1946.

Porous paper may be made moisture-resistant by first treating it with a resin coating such as polyvinyl chloride and then dipping it in a benzene solution of vinylidene chloride polymer. TTD:3-46.

FABRIC COATING. Camille Dreyfus. Can. P. 431 570, Dec. 4, 1945; USP 2 393 200, Jan. 22, 1946.

Fabric, especially for airplane fuselages, is treated with a base and a top coating of cellulose acetate of vary-

ing acetyl content. Each coating upon drying shrinks and becomes tightly adherent, giving a strong weatherproof film. Example: The base coat contains acetate with 42.9% acetyl and is plasticized with triphenyl phosphate; the top coat contains acetate with 54.5% acetate and is plasticized with glyceryl phthalate.
TTD:3-46.

WATERPROOFING. Ralph Canter & Harvey D. Geger (to General Motors Corp.). Can. P. 432 660, Jan. 22, 1946.

A water-repellent coating consists of a resin mixture, carnauba wax and a wax such as "Stanolind", the 2 waxes being in about 1:1 to 9:2 ratio to the resin.
TTD:3-46.

Rotproofing **VIII 3**

MILDEWPROOFING. Protection from fiber to garment. Anon. *Rohm & Haas Reptr. 3,* No. 5 3-4, 12 (Dec. 1945).

Hyamine 3258 (quarternary ammonium pentachlorphenate) is a fungicide that inhibits the formation of molds to a large extent; it does not afford protection after repeated laundering. It is easily applied and useful for tents, tarpaulins, knapsacks, etc.
TTD:3-46.

MILDEWPROOFING TREATMENT. Anon. *Rayon Textile Monthly 26,* 666 (Dec. 1945).

A group of complex organomercurial compounds which have been "puratized", effectively combats the fungi and bacteria associated with mildew on cotton fabrics.
TTD:3-46.

Flameproofing **VIII 4**

FLAMEPROOFING. Head off fire with treated materials. Anon. *Modern Ind. 10,* No. 6, 36-9 (Dec. 15, 1945).

Spurred by military necessities, flameproofing treatments have been much advanced. While chemically treated fabrics will not burn, they will char and under sufficiently intense flame will be destroyed. Flameproofing thus minimizes fire loss but will not prevent it.
TTD:3-46.

FLAMEPROOFING agents for textiles, paper and wood. Reid G. Fordgre, Monsanto Chem. Co. *Chem. Ind. 57,* 1069-70 (Dec. 1945).

These flameproofing agents are commented upon; ammonium sulfamate, diammonium phosphate and diammonium ethyl phosphate (all water soluble, the last more expensive than DAP but gives better hand), boric acid-sodium borate (does not eliminate afterglow), chlorinated paraffin and antimony oxide (water-insoluble but hard to apply), resin impregnation (treatment with some resins permanent). Synthetic fibers like Vinyon, Saran and Geon containing high amounts of Cl are flame resistant in themselves while glass fibers are truly nonflammable. TTD:3-46.

FLAMEPROOFING. Purdum M. Snyder (to H. H. Robertson Co.). USP 2 392 272, Jan. 1, 1946.

A laminated protective covering for iron or steel sheets is made flame resistant by coating or impregnating, as required, layers of fibrous material with one, preferably more, of the soaps of Mn, Zn, Fe, Mg or Ba in a bituminous composition. TTD:3-46.

FLAMEPROOFED BAG. H. Potter (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 570 135. *Textile Mfr. 71,* 550 (Dec. 1945).

Powder bags are rendered smolderproof by treating with an aqueous acidic substance. Example: a bag soaked 2-4 hrs. in 0.2% HCl solution at 40-50° C., rinsed and dried. TTD:3-46.

Shrinkproofing **VIII 6**

SHRINKAGE. Rayon fabric shrinkage control. Anon. *Can. Textile J. 62,* No. 26, 44 (Dec. 28, 1945); *Fibre & Fabric 98,* No. 3177, 6-8 (Dec. 22, 1945).

Shrinkproofing by use of urea-formaldehyde resins is satisfactory if material does not have to be laundered; otherwise it is undesirable because such resins are chlorine retentive. Two new processes are effective for shrinkage: (1) a chemical process in which an agent alters the molecular structure of the surface of the rayon fiber: (2) the "Definized Process" in which a chemical is padded to the greige goods, dried, and then immersed in another chemical.
TTD:3-46.

SHRINKPROOFING. J. L. Raynes, F. M. Stevenson & Stevensons, Ltd. Brit. P. 569 730; 570 582. *Textile Mfr. 71,* 548, 552 (Dec. 1945).

Shrinkproofing of wool and other animal fibers consists in treating with a dilute solution of a stannous compound followed by a solution of a nitrogen-chloro compound or of an alkali metal hypochlorite (or hypobromite). TTD:3-46.

NONFELTING WOOL. Ellis Clayton (to Finishing Processes (Textiles) Ltd.). Can. P. 431 822, Dec. 11, 1945.

Wool is rendered resistant to felting, without sacrificing its characteristic physical properties, by treatment at pH approximately 9 with a dilute Na (or Ca) hypochlorite solution. It is saturated with CO_2 so that the liquor is slightly alkaline at first but gradually becomes slightly acid in presence of the wool fibers.
TTD:3-46.

TESTING AND ANALYSIS IX

Physical properties **IX 1**

COTTON FIBER PROPERTIES. Fiber and spinning properties of cotton at progressive stages of development. Earl E. Berkley, USDA Agricul-

tural Research Administration. *Textile Research J. 15,* 460-8 (Dec. 1945).

Results of experiments on structural and physical properties of cotton fibers with respect to fiber and spinning properties are reported and discussed. X-ray angle, fiber strength, length, fineness, and percentage of thick-walled fibers are determined and cross-section studies made. The terms maturity and immaturity to designate cell-wall developments are not considered accurate. In distinguishing thin-walled fibers the results of hereditary factors should be distinguished from those of arrested development. A wall development index is tentatively suggested. TTD:3-46.

FIBER BLENDER. Ruby E. Stewart, Chicopee Mfg. Corp. *Textile Research J. 15,* 468-9 (Dec. 1945).

A fiber blender that will quickly and easily prepare a homogeneous sliver for various fiber tests consists of 2 hand-driven wooden rolls covered with stripper wire. These rolls will open, clean, mix, and collect the fibers, which may then be doffed with a hand board. TTD:3-46.

FIBER STRENGTH. Strength of textile fibers compared. Anon. *Saco-Lowell Bull. 17,* No. 4, 32 (Dec. 1945).

Strengths of a number of common fibers (wool, silk, ramie, acetate, viscose, nylon, cuprammonium, cotton, steel, etc.) are compared tabularly in g/denier and lb/sq. in. TTD:3-46.

FLAX FIBER QUALITY. Judging the spinning quality of green flax. Anon. *Fibers, Fabric & Cordage 12,* 500, 503 (Dec. 1945).

Three properties mainly determine spinning quality of flax: strength, fineness, and length. The Linra (Linen Industry Research Assoc'n) analyzer in a few minutes produces a cleaned fiber closely resembling hackled flax from which the spinner may more accurately determine the quality than from the green scutched flax. TTD:3-46.

MEASURING COOLNESS. New test apparatus for measuring coolness of textiles. R. H. Armitage, U. S. Testing Co. *Rayon Textile Monthly 26,* 587-8 Nov. 1945).

A coolness tester measures the coolness of textiles, based on the ability of a fabric to transmit moisture (human perspiration) to the outer side of the fabric to be evaporated by air and on the cooling effect due to air permeability. TTD:3-46.

TIRE TEST. Application of torsional hysteresis test to tires. Helmut Wakeham & Edith Honold. *India Rubber World 113,* 377-81 (Dec. 1945).

The hysteresis properties of a relatively small number of tires are tested according to the method of Mooney and Gerke. Because of variations in tire designs comparisons could not be made between rayon and cotton cords. There is evidence, however, that presence of

cord is responsible for higher hysteresis as compared to an all-rubber sample. TTD:3-46.

YARN DENSITY. Yarn manufacturing processes. Anon. *Fibers 6,* 183 (Dec. 1945).

The "deviometer" in conjunction with a sliver tester, measures density irregularity of slivers. TTD:3-46.

Chemical analysis — IX 2

COLOR CHART. A new tool for evaluating color transference. W. A. Holst, *Am. Dyestuff Reptr. 34,* P500-1 (Dec. 3, 1945); *Textile Colorist 67,* 172-3, 188, 202 (Dec. 1945).

Based on the Munsell Book of Color the AATCC color chart easily measures transference of color by purely visual methods with ratings of 5 to 0. TTD:3-46.

FIBER MEASUREMENT. A device for expediting measurement of fiber diameter. E. H. Mercer & W. I. B. Smith. *J. Council Sci. Ind. Res. (Australia) 18,* 273 (Aug. 1945).

By rolling the wheel of a cartometer over the projected images of the fibers along certain paths it is possible to determine average fiber diameter. TTD:3-46.

pH METER. New pH meter designed for ease of operation. Anon. *Southern Knitter 9,* No. 12, 56-7; *Textile Age 9,* No. 12, 106 (Dec. 1945).

An easily operated meter to regulate control of pH is announced by Macbeth Corp. TTD:3-46.

Biological testing — IX 3

DYEING OF COTTON with mineral khaki. VII. The fungicidal and bactericidal efficiencies of cotton yarn treated by various mineral khaki processes. E. Race, F. M. Rowe & J. B. Speakman. *J. Soc. Dyers Colourists 61,* 310-21 (Dec. 1945).

This is part 7 (of 9) of a comprehensive investigation on the rotproofing of cotton, first reported in 1941. Accompanied by photographs (one in color) of cotton yarns, graphs, tables and drawings, it examines the fungicidal and bactericidal efficiencies of yarn processed with 7 Cr-Fe pigments. No single rotproofing, it is found, is suited to all materials. The yarn used in the investigation is 24s/3 gray cotton. TTD:3-46.

Specifications — IX 4

FIBERBOARD TESTER. Flexural resistance and deflection of fiberboard. Anon. *Paper Trade J. 121,* No. 26, 43-4 (Dec. 27, 1945).

A revised method of testing flexural resistance and deflection of fiberboard is suggested. TTD:3-46.

WASTES — X

Fibrous wastes — X 1

COTTON WASTE. F. Bentley. *Textile Mfr. 71,* 524-8 (Dec. 1945).

Cotton waste whether hard or soft may be spun by the

preparation (a modification of the cotton system) or by the condenser system (a modification of the woolen system). Modernization of waste spinning methods is discussed. TTD:3-46.

WASTE EXTRACTOR. No. 11 dust and waste extractor as a cleaning unit. Anon. *Saco-Lowell Bull. 17,* No. 4, 28-31 (Dec. 1945).

Removal of dust and waste particles (pepper leaf and seed particles) is effectively accomplished by the strong air stream in this No. 11 extractor. TTD:3-46.

WASTE RECOVERY. Geo. W. Seymour & Geo. C. Ward (to Celanese Corp. of Am.). USP 2 393 712, Jan. 29, 1946.

Wool fibers in blends with acetate rayon may be recovered undamaged, for reuse by treating the fiber mixture with an aqueous solution comprising a swelling agent (e. g. ethylalcohol, about 5-15%) and a carbonizing agent (e. g. H_2SO_4 about 4-8% and HCl about 2-5%) and then drying at 100-150°C for 5-30 min. TTD:3-46.

HAZARDS XII

HAZARDS. Accident and fire prevention in textile mills. Henry Miedendorp, Jr. *Rayon Textile Monthly 26,* 667-70 (Dec. 1946).

A safety code, particularly as regards fire prevention, is outlined. TTD:3-46.

SAFETY in textile plants is important. Nat'l Safety Council. *Rayon Textile Monthly 26,* 609 (Nov. 1945).

Series of 15 safety instruction cards is announced by Nat'l. Safety Council. TTD:3-46.

TEXTILE MILLS XIII

APRON. New bobbin-carrying apron. Anon. *Textile Weekly 36,* 1070, 1072 (Dec. 7, 1945).

Instead of being able to carry some 20 bobbins under her arm, a girl with the aid of a new bobbin-carrying apron can carry as many as 80 bobbins. TTD:3-46.

GOOD MILL LIGHTING. James T. Meador. *Textile Bull. 69,* No. 5, 25-6; No. 7, 28, 30 (Nov. 1, Dec. 1, 1945).

Effective and economical lighting of textile mills depends on proper observance of the 2 principles that long lines on a single circuit have excessive voltage drop, and that the higher the voltage the less the voltage drop, which interferes with good lighting. Examples of mill lighting in accordance with these principles are described and illustrated. In more compact layouts instead of a "unit system", a group of lighting transformers is used. TTD:3-46.

MECHANICAL HANDLING. Four mills lower costs with mechanical handling equipment. Geo. Ransom. *Textile Age 9,* No. 12, 48, 52, 54, 56-8 (Dec. 1945).

Use of an automatic monorail conveyor has been proving very efficient in 4 different mills. TTD:3-46.

MILL CONSTRUCTION. James Osborne. *Textile Age 8,* No. 12, 44, 46, 48, 50 (Dec. 1944); *9,* No. 1, 70, 73-4, 76, 78, 80; No. 2, 84, 86, 88-9; No. 4, 80, 82, 86-8; No. 5, 86, 89-90, 92-3; No. 6, 84, 86, 88, 90, 92, 94-5; No. 7, 83-7; No. 8, 82, 84-6; No. 9, 88, 90, 94; No. 10, 88, 90-3; No. 11, 78, 80, 82, 84-5, 88; No. 12, 76, 78, 80 (Jan., March-Dec. 1945).

Problems to be encountered in postwar mill constructions are discussed. Glass and ceramic tiles have reached a price basis permitting their use in certain wall and trim types of structure. Resin treated and bonded wood construction may also enter this field. Relative merits of single story and multistory mill buildings are discussed. The planning of modern picker rooms, carding rooms, roving sections and spinning rooms are considered. TTD:3-46.

MILL IMPROVEMENTS in driving, heating, lighting, etc. D. R. H. Williams. *Textile Mfr. 71,* 531-3 (Dec. 1945).

Thermostatic control of heating, individual loom electric drives (instead of group drives), fluorescent lighting and decorating are considered as aids to the health and comfort of workers. TTD:3-46.

MILL OPERATIONS. Eastern Carolina STA program features discussion of current operating methods. Anon. *Textile Bull. 69,* No. 7, 20, 22, 24, 26-7 (Dec. 1, 1945).

A partial stenographic report on mill processes and problems. It covers opening, picking, slashing and weaving. TTD:3-46.

SPINNING AND WEAVING MACHINERY. Anon. *Textile Weekly 36,* 1198, 1200 (Dec. 21, 1945).

The position of British textile mills and machinery as a result of the war is briefly reviewed. TTD:3-46.

STREAMLINE PRODUCTION with mechanical materials handling. Henry Miedendorp, Jr. *Rayon Textile Monthly 26,* 607-9 (Nov. 1945).

Labor-saving devices in textile mills and methods for promoting more efficient handling of textiles are discussed. TTD:3-46.

TEXTILE MACHINERY. Various textile machinery developments noted. Carl Brandt, Whitin Machine Works. *Am. Wool & Cotton Reptr. 59,* No. 49, 13-4, 48-9 (Dec. 6, 1945).

A talk on machinery developments in U. S. and Germany. A clearer card for blends is mentioned. Some break draft tests are discussed. TTD:3-46.

WATER SUPPLY. Process water for rayons. Lewis B. Miller, W. H. & L. D. Betz. *Rayon Textile Monthly 26,* 657-62 (Dec. 1945).

With a small mill using 1,000,000 gal/day mill operators must consider quality of water. Even minute amounts of Fe or Mn are deleterious and are present usually as hydroxides. The pH of process water is not specified. Remedies for various undesired water conditions, such as hardness and turbidity are suggested. TTD:3-46.

WATER TREATMENT. Wm. S. Habbart, Am. Viscose Corp. *Rayon Textile Monthly 26,* 579-81 (Nov. 1945).

Water requirements of a rayon mill are considered from the time of receiving it to disposal. The varying problems of treating it for use, and then for disposal without stream pollution are discussed. TTD:3-46.

BASIC SCIENCES XIV

ELECTRONICS in textile industry. N. H. Chamberlain, Leeds Univ. *Wool Record & Textile World 68,* 1058, 1061-2 (Dec. 13, 1945).

Electronics in the general sense is introduced, and then its more specific possible applications to the textile industry are briefly described. Such applications include valve controls, positive take-up and let-off mechanisms for looms, measurement of moisture content and regain, and automatic control of dryers. Photoelectric applications are: automatic counting, warp-stop motions for looms, measurement of color control in dye solutions and dyed materials, etc. In respect to the color of dyed shades, however, the photoelectric cell measures the amount of light reflected, not the color as such. TTD:3-46.

COPOLYMERIZATION. Experimental study of copolymerization. T. Alfrey, Jr., E. Merz, & H. Mark. *J. Polymer Research 1,* 37-43 (Jan. 1946).

The systems styrene-2, 5-dichlorostyrene, styrene-methyl acrylate, styrene-diethyl maleate, and styrene-diethyl chloromaleate are studied and the critical constants alpha and beta determined. TTD:3-46.

POLYMERS. Mechanism of peroxide-initiated styrene polymerization. Harry F. Pfann, Van Zandt Williams, & H. Mark. *J. Polymer Research 1,* 14-21 (Jan. 1946).

Using infrared absorption data, it is shown that the carbonyl group of the initiating peroxide was transferred to the polymer during polymerization, presumably as an end group. There was also observed some relationship between carbonyl absorption and the molecular weight of the polymer formed. An alkyl type of radical, as well as an oxygen-containing radical, can initiate polymerization of styrene. TTD:3-46.

POLYMERS. Mechanism of vinyl polymerizations. VIII. Introduction of foreign end groups. Charles C. Price & David H. Read. *J. Polymer Research 1,* 44-48 (Jan. 1946).

Dichloroquinone and dichlorohydroquinone were studied as inhibitors of styrene polymerization. Both act as chain transfer agents rather than inhibitors and thus resemble chloranil rather than benzoquinone and hydroquinone. Attempts to place labeled foreign end groups at each end of the polystyrene molecules were only partially successful; 2-4 times as many retarder fragments as catalyst fragments were incorporated in the polymer. This behavior was ascribed to weak chain transfer characteristics in the retarder molecules. TTD:3-46.

RUBBER-LIKE ELASTICITY. A new approach to the theory of rubber-like elasticity. Maurice L. Huggins. *J. Polymer Research 1,* 1-13 (Jan. 1946).

Various simple hypothetical model substances were mathematically treated to derive stress-strain curves which are similar in form to those ordinarily obtained from rubber and rubber-like materials. These hypothetical models provide a technique for studying the dependence of the initial elastic modulus and the shape of the stress-strain curve on various characteristics of the rearranging systems. TTD:3-46.

CHARACTERIZATION OF ORGANIC COMPOUNDS. Sam'l M. McElvain, Univ. of Wisconsin. Macmillan Co., New York, N. Y., 1945; 282 pp., price $3.40.

Reviewed in *Science 102,* 599-600 (Dec. 7, 1945). TTD:3-46.

STREAM SANITATION. Earle B. Phelps. Jno. Wiley & Sons, Inc., New York, N. Y. 1945; 276 pp.; price $3.25.

Reviewed in *Chem. Eng. News. 23,* 2266 (Dec. 10, 1945). TTD:3-46.

TEXTILE RESEARCH XV

BRITISH TEXTILES. Recent textile developments in Britain. A. J. Hall. *Am. Dyestuff Reptr. 34,* 494-6 (Dec. 3, 1945).

War-caused problems of the British textile industry are discussed. Treatment of wool fibers with melamine ether resin to reduce felting is proving successful. Introduction of "Ardil" (a rayon from proteins of peanuts) is noted. TTD:3-46.

GERMAN RAYONS. Report on rayon staple fiber school at Denkendorf, Germany. Earl K. Heard. *Rayon Textile Monthly 26,* 575-8 (Nov. 1945).

The Germans' conversion of their cotton and wool spinning system to rayon and the setting up of a model plant at Denkendorf are described. This plant has 5000 cotton spindles and 2500 worsted. Germany's use of single fiber testing in contrast to fiber bundle testing in U. S. is mentioned. The Frenzel-Hahn machine is used for break tests. TTD:3-46.

TEXTILE PROPERTIES. Mechanical properties of textiles. II. General theory of elasticity with application to partially rubber-like substances. Geo. Halsey & Henry Eyring. Textile Foundation and Princeton Univ. *Textile Research J. 15,* 451-9 (Dec. 1945).

Molecular deformation of molecular segments in fibers is examined, with the aid of numerous equations. The hypothesis is that the ends of molecules are more or less fixed by chemical forces but segments between the ends are free to assume many configurations under thermal agitation. It is found that temperature fluctuations change the effective number of molecular segments. The theory bridges the gap between rubbery elasticity and the elasticity of crystals. It is discussed as pertaining to stress-strain relations. TTD:3-46.

TEXTILE SCHOOL in the industry today. Hugh M. Brown, Clemson Textile School. *Am. Wool & Cotton Reptr. 59,* No. 51, 21, 23, 55 (Dec. 20, 1945).

An address before the Southern Textile Association Dec. 8, 1945. TTD:3-46.

VISCOSE RAYON. Skin effect in viscose rayon. Frederick F. Morehead and Wayne A. Sisson, Am. Viscose Corp. *Textile Research J. 15,* 443-50 Dec. 1945).

Skin effect and its relationship to the obtaining of a strong, tough rayon (such as for tire cords) are investigated. Differential staining of the skin and core of viscose rayon (preferably by the use of Victoria Blue for the skin and Calcomine yellow for the core) shows that skin formation is related to crystallization rate of the cellulose in the spinning bath rather than orientation from stretching. Inasmuch as the presence of a di- or trivalent metal (Zn, Al, Fe, Ni, etc.) is necessary to form a skin, the tentative hypothesis is suggested that there is a momentary reaction between these metals and the xanthate groups on the cellulose which prohibits "crystallization by producing temporary cross-linkage between cellulose chains." From this investigation it develops that a strong, tough yarn is attained best by combining good orientation with poor crystallinity as this gives high strength and elongation. Photomicrographs show cross-sectional samples of tire cord yarn and rayon and cotton fibers with differential staining. TTD:3-46.